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## ORIGINAL ARTICLES.

### A CASE OF MALIGNANT MEASLES.<sup>1</sup>

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*House-epidemic of measles; four cases, of which one was hemorrhagic; at the time of the convalescence of the last of this group, rapidly developing illness of an adult male member of the household, with petechiæ, collapse, violent fever of reaction, continuing stupor passing into coma; death upon the fifth day.*—The family in which the case about to be described occurred, in addition to the servants, all of whom escaped, consisted of five persons; the father, thirty-seven years of age, who at sixteen had typical measles at the same time with his sister; the mother, who never had measles; and three children, aged respectively eleven, nine, and seven years.

On March 9th the second child, a girl, had measles, the rash appearing upon the fourth day and the attack running a mild course without complications.

On March 14th the youngest child, a boy, developed the disease, the rash appearing upon the fourth day. The attack proved a very severe one, the temperature on several occasions reaching 105.6° F., and petechiæ in great abundance developing on the second day after the appearance of the exanthem, especially upon the extremities. This case terminated in complete recovery.

The third case was that of the mother, the attack beginning on the 19th, the rash appearing on the fifth day. The attack was severe and attended with pronounced catarrhal symptoms and great prostration.

The rash was first observed upon the oldest child, a girl, on the 25th, the case being remarkably mild and running a short course.

J. H. G., the father of the children, thirty-seven years of age, was a muscular, well-developed man, of medium stature and excellent general health. He had been until early adult life a stammerer, but had by persistent effort overcome this defect of speech. He had also suffered from early childhood from hay-fever, and having failed to obtain permanent relief from local treatment of the nose was in the habit of spending the months of August and September in camp in the forests of Northern New York or Maine. His paternal grandfather died at an advanced age of diabetes; his father at the age of sixty-one of pernicious anemia. Otherwise the father's family was healthy and long-lived. On the

mother's side there was a history of gout and migraine. The patient was one of five children, of whom two died in infancy and two survive.

On April 1st the patient appeared to be in perfect health, and incidentally observed that he had never felt better in his life. In the course of the following night he awoke and felt uncomfortable, remarking subsequently that he thought he had an attack of indigestion. On the morning of April 2d he felt indisposed and had a temperature of 100° F. Nevertheless he went out and attended to business engagements. He returned in the middle of the day, complaining of headache, his axillary temperature being 103.5° F. There had been no chill or chilly sensations, no nausea or vomiting. The headache was at this time diffuse and severe. There was neither rigidity nor tenderness upon pressure of the muscles of the back of the neck. The pulse was of fair volume, 100 per minute. There was a slight redness of the anterior half-arches, but no pain on swallowing. Other catarrhal symptoms were absent. At 7 P.M. the temperature had fallen to 102.4° F. The headache was less intense; the condition of the throat unchanged; the tongue was slightly coated; the pulse 112, of moderate volume and tension; the face pale. The man now expressed some uneasiness about his condition, and stated that he had never before felt so sick.

It was reported that during the course of the night the patient had twice gotten out of bed for a drink of water. On April 3d, at 8 o'clock, the man was stupid, and could be roused only with difficulty. The surface was cool, bathed in sweat, and the skin was covered with petechiæ. The hemorrhagic spots varied in diameter from 1 to 8 or 10 mm. They were mostly ovoid or circular in outline, but many of the larger ones were quite irregular. They were very abundant and nearly uniformly scattered over the trunk and thighs, but were more thick-set upon the arms and legs, and were especially massed at the wrists, on the neck, and about the temples. A number were visible upon the palms of the hands. In several groups a distinctly crescentic arrangement was noted. There was no hemorrhage from mucous surfaces. The temperature was 100.2° F.

At 11 o'clock the man's condition had become desperate. The temperature had fallen to 99° F.; the skin was cold and clammy, shriveled and inelastic. The pulse was 120, but so feeble as to be counted with difficulty. Upon being roused the patient made monosyllabic replies, and put out his tongue, but had to be again aroused to retract it. Under treatment, which consisted of hypodermatic injections of strychnin, atropin, tincture of digitalis and brandy, the application of external heat, oxygen-inhalations, sinapisms, reaction took place,

<sup>1</sup> Read at the Annual Meeting of the American Pediatric Society at Washington, May 30, 1894.

but stupor bordering upon coma continued. The tongue was dry and glazed. The patient when roused asked for water, which he swallowed with eagerness. Weak milk-punch and liquid beef-peptonoids were from time to time administered. The bowels were constipated, and the urine not being voided catheterization became necessary, and was with some difficulty effected by Dr. Keen. It was thought best to leave a catheter *in situ*. There was no vomiting and no rigidity of the neck. The pupils were of medium size, equal and reactive to light.

At 4 P.M. the temperature was 97.2° F., the pulse 108, the respirations 32.

At 8.30 P.M. the temperature was 98° F., the pulse 108, the respirations 30. The condition of the patient was otherwise unchanged.

During the night, from April 3d to 4th, the temperature rose steadily. At 6 A.M. it was 102.6° F.; at 8.30 A.M., 104° F. It remained high, reaching 105.2° F. at 6 P.M.

During the day a small number of maculo-papules of a faint, dusty-pink color were observed upon the wrists, the side of the face and neck, but not elsewhere. Slight conjunctivitis was present, more marked in the right eye. There was no sneezing and no cough. There was some impairment of resonance, with feeble vesicular murmur and small mucous râles at the bases posteriorly, these signs being more marked upon the right side. The first sound of the heart was feeble. There was occasional delirium of a quiet kind, with snatches of song and low whistling. Upon being roused and interrogated the patient replied that he felt very well. There was slight muscular rigidity, so that the limbs somewhat resisted flexion. The reflexes were preserved, but not increased. During catheterization there was noticed for the first time a rhythmic spasm of the muscles of the right thigh and leg. Blood was taken from a large petechia upon the thorax, by Dr. A. C. Abbott, for microscopic examination and culture.

Toward evening the delirium ceased, and the condition was one of stupor, from which the patient could with difficulty be momentarily aroused. The head was slightly retracted, but could be flexed upon the chest and moved from side to side without difficulty and without eliciting indications of pain. The condition of the pupils was unchanged. *Risus sardonicus* and *subsultus tendinum* were almost constant.

The urine, diminished in amount, passed away through the catheter, which was retained in position. It was acid in reaction, of a specific gravity of 1029, and contained a small amount of albumin, but no sugar, and no crystals. Upon the examination of several slides there was discovered a single hyaline cast, slightly granular. The bowels had not been moved. The pulse was from 130 to 140, feeble, irregularly intermittent, difficult to count. The cardiac impulse and the first sound of the heart were feeble. The respirations ranged from 38 to 46.

On April 5th the condition was about the same as it had been. The rhythmic tremors observed

the day before during catheterization now recurred from time to time spontaneously, or were provoked by movement of the limbs, arranging the bed-clothes, etc. They sometimes affected the muscles of the right leg; sometimes they were confined to those of the left, and sometimes they affected both lower extremities. The upper extremities had only occasionally shown this phenomenon, and then to a very slight extent. The administration of fractional doses of calomel, followed by an enema, resulted in a copious evacuation of the bowels. The temperature remained high, fluctuating between 103.5° and 105° F. The papular eruption observed the previous day upon the face, neck, and wrists had faded.

Shortly after midnight on April 6th there was a large, loose movement of the bowels. The temperature having risen to 105° F., the pulse being 144, the respirations 46, the patient was placed in a bath at the temperature of the room, cooler water being poured over the head and face. The duration of the bath was ten minutes. At its close there was noted a transient lessening of the stupor. An hour later the temperature had fallen to 101.6° F., and the pulse to 130, while the respiratory frequency remained about the same. For some hours the temperature fluctuated between 102° and 103° F. It rose toward morning to 104° F. The stupor deepened, the breathing became more shallow, the pulse more feeble and frequent. The temperature rose to 105.6° F., and at 9 P.M. death occurred.

Rigor mortis was fully established in the course of two hours, at which time there was general discoloration of the abdomen and thighs. An autopsy was not permitted. No subsequent infection arose in the house or in any attendant or visitor.

The treatment during the first day consisted in the administration of antipyrin, gr. ijss, together with caffein citrate, gr. j, at intervals of an hour and a half or two hours. Some four or five doses in all were taken. On the second day the treatment was directed to the condition of collapse, as already indicated. It consisted principally in the administration of ten-minim doses of tincture of digitalis hypodermatically at intervals of two or three hours, with gr.  $\frac{1}{16}$  of strychnin sulphate at like intervals, and gr.  $\frac{1}{16}$  of atropin on three occasions, and the free administration of alcohol hypodermatically, the application of external heat, sinapisms, and frictions of the extremities. Inhalations of oxygen were given from time to time. The digitalis had no obvious influence upon the action of the heart or the pulse. On the other hand, the hypodermatic injection of strychnin was usually followed by a temporary increase of cardiac force. The inhalation of oxygen had a remarkable influence, which was repeatedly noted, in slowing and deepening the respiratory movements.

When, in the course of the third day, muscular rigidity, tremor, and risus appeared, the question arose as to whether or not they were produced by

the strychnin. This drug had, however, been given in moderate doses and at considerable intervals. Its employment was nevertheless at once suspended. The symptoms referred to continued until the patient became comatose, and were doubtless due to causes entirely independent of the treatment.

The remarkable influence of the bath in lowering the temperature was not accompanied by other favorable manifestations, except a very transient improvement in the mental condition. The temperature began to rise after a short time, and continued to do so until in the course of a few hours it had reached its former level. The bath was regarded by the patient's friends as an unnecessary hardship, and excited their opposition. Partly for this reason, and partly because it was evident from the beginning that the illness would prove fatal, its administration was not repeated.

Dr. Abbott reported as follows:

"I have examined the blood of Mr. G., both microscopically and by culture-methods. Microscopically nothing of importance was detected, beyond a rather high proportion of polynuclear leukocytes and a relatively low number of other lymphatic elements.

"Neither bacteria nor any other forms of parasites were detected. Efforts at cultivation, made both by the ordinary methods and by special anaërobic methods, resulted negatively in all of ten or twelve tubes. One tube only showed a growth, and this a single colony of the ordinary 'skin-coccus.'"

To make the history complete it is necessary to state that a pet dog had been ill for three weeks with so-called chorea, and was chloroformed about the time the first case of measles occurred in the house. Subsequently members of the patient's family raised the question as to the nature of the dog's illness and as to the possibility of the communication of some obscure virulent infection from the animal.

I wrote to Dr. Leonard Pearson, in regard to the illness of the dog, and received the following reply:

"Your favor is at hand, and I take pleasure in giving you the information that you request in reference to Mr. G.'s dog. I first saw the dog (a small female spaniel, about three years old), Sunday, February 25th. At that time there was well-marked chorea of the hind legs, accompanied by great muscular weakness. The animal was in other respects in a normal condition. The pulse was regular, the temperature 101°, the appetite good, etc. The prognosis was unfavorable, because I know from experience that these cases do not respond readily to treatment, although they do sometimes recover. The animal continued to grow worse until Friday, March 9th, when it died. It never had fever; petechiæ were not present at any time, and the only abnormality, beyond the chorea and resulting weakness, was a slight swelling of the nasal mucous mem-

brane. I last saw the animal Thursday, March 8th. At that time it was completely exhausted, and I advised its destruction, as I had previously done on several occasions, but was told that it had been decided to keep the dog as long as it could eat.

It may be that chorea followed distemper, but I am not at all clear on that point, as there is no history of previous illness, with the exception of a passing indigestion; while distemper is a disease accompanied by great prostration and a catarrhal condition of the mucous membranes, with discharges from most of the natural openings, there was no evidence of infection during the time that I had the dog under observation. Even if the animal had suffered from a malignant attack of distemper, which was not the case, I have no reason to think that a person could become infected from such a source. If it were possible, we would undoubtedly hear of numerous cases among kennel-attendants, who frequently have to nurse a large number of puppies with the distemper. The attendant in the dog-hospital at the University would be especially exposed to this danger, did it exist, but I have never heard of a case of the sort, nor have I ever known of an instance in which it was even suspected."

Apart from the general interest excited by instances of malignant infection, this case is chiefly important from the standpoint of diagnosis. We are familiar with such cases in the common acute infections. There are few practitioners of large experience who have not seen instances of malignant scarlet fever, the nature of which in the absence of characteristic symptoms has been evident in the light of the prevalent local or house-epidemic. Cases of this kind are far from uncommon in small-pox. They have occurred very frequently in cerebro-spinal fever, usually at the outset of epidemics. It is of the cases of this variety of epidemic cerebro-spinal meningitis that the learned Stillé has said, in discussing the futility of treatment, that "the first symptoms of the disease are the first phenomena of death."

Cases of malignant measles occur among children in institutions, especially when there is crowding or the conditions are otherwise unsanitary. They are occasionally observed in camps and garrisons, and the malignity of measles when first introduced among a people previously free from it was shown in the great epidemic in the Fiji Islands in 1875.

Harwood,<sup>1</sup> who observed this epidemic, states that the type of the disease was adynamic, and that in this respect it differed markedly from measles among the Anglo-Saxon races. Vital depression was early and marked. Death followed rapidly the first appearance of the symptoms.

William Squire, who published a more circumstantial account of this great epidemic, estimated

<sup>1</sup> S. S. Harwood: *Pacific Medical and Surgical Journal*, 1875, Vol. vi, pp. 351-355.



that from one-fourth to one-fifth of the native population, or more than 20,000 persons, perished in the course of four months from this disease. Squire<sup>1</sup> says: "One need invoke no special susceptibility of race nor peculiarity of constitution to explain this great mortality." He ascribes it to fear, to bad conditions of living, and a want of care—a view not generally accepted, and not sustained by subsequent events.

But malignant measles in general practice and especially among persons living, as in my case, under the most favorable hygienic conditions, is extremely rare. For this reason, and for others that suggest themselves, especially with reference to prophylaxis against a new infection that might have been accidentally introduced, the question of diagnosis became one of great practical importance. The differential diagnosis had to be made between measles on the one hand and (1) typhus, (2) purpura fulminans, (3) cerebro-spinal fever or (4) variola on the other hand.

1. Of *typhus* there could scarcely be a question. Philadelphia has, it is true, at long intervals been visited by limited local epidemics of typhus fever, occurring usually among immigrants and under conditions of poverty and squalor, but there have been no cases reported for a long time, and the patient had had no communication with persons of those classes in which typhus is likely to show itself. He had, moreover, during the month previous to his sickness, spent most of his time in his own house, occasionally going to a country place for exercise, or to two or three offices in the city where he had business.

2. The possibility of the disease being an unusual form of *purpura fulminans* was carefully considered. Against this, however, several important facts are arrayed, namely: the previous excellent health of the patient, his age, the sudden onset of the attack, the pyrexia, the rapid development of a universal petechial rash, which did not increase either in numbers or in size, the absence, although life was prolonged five days, of bleeding from mucous surfaces, and finally, the faint and limited measly rash which appeared upon the third day.

3. *Cerebro-spinal fever*. Certain of the symptoms suggested a sporadic case of cerebro-spinal fever. These were the suddenness of onset, the violent initial headache, early collapse, hemorrhagic eruption, nervous phenomena, as delirium, stupor, tremor, and rigidity, shallow respiration and faint and arrhythmic action of the heart. But vomiting did not occur, painful rigidity of the muscles of the back of the neck was absent, and there were no evidences whatever of meningeal inflammation.

Moreover, the rash observed upon the third day acquires in this connection a diagnostic importance of the highest degree. Why should we go out of our way in search of an explanation of the case when there was in the patient's household an infection to which he had been directly and peculiarly exposed for a considerable time?

4. *Smallpox*. The absence of exposure, so far as known, the absence of anything in the rash like a pock, previous, repeated vaccination, good scars, the character of the petechiæ, which nowhere tended to spread, and the fact that no contagion arose subsequently in the house, negative the hypothesis that the nature of the case was variolous.

The direct diagnosis of malignant measles rests upon the exposure, the faint and limited but distinct maculo-papular rash, the crescentic arrangement of the petechiæ and the febrile movement, active at first, interrupted on the morning of the second day by collapse due to overwhelming toxemia, and re-established upon reaction.

Dr. Abbott's examination of the blood yielded, it is true, a negative result, but this fact does not militate against the diagnosis, as negative results have occurred in a large proportion of examinations of the blood in measles, and the positive results of various observers are as yet far from being in accord. Nor can the fact that the patient had measles in his boyhood be urged against this diagnosis, as unquestioned second attacks occasionally occur.

In this group of five cases there were, then, illustrations of the two forms of hemorrhagic measles described by systematic writers. First, the benign variety, which showed itself in the son. In him the attack was severe but typical in its evolution, the rash showing itself on the fourth day with its usual characteristics, and only becoming hemorrhagic a day or two later, the hemorrhage being confined to the papules and outlasting them for a considerable period, recovery taking place without other unfavorable manifestations. And second, the malignant or fulminant form, in which an overwhelming infection, acting at once upon the nervous system and the blood, deranges the familiar sequence of the phenomena of the disease and replaces the ordinary symptoms by the morbid manifestations of a toxemia of the gravest kind.

This latter form is well described by Louis Starr<sup>1</sup> in the following words:

"Malignant, ataxic, or black measles may occur as an epidemic or sporadic affection, but it is usually the former. There is great prostration; the patient is dull and stupid; the pulse is small, feeble, and frequent; the respiratory movements are difficult and rapid; the rectal temperature is high, often reaching 107° or 108° F., while the hands and feet

<sup>1</sup> Transactions Epidemiological Society, 1880, vol. iv, p. 74 et seq.

<sup>1</sup> An American Text-book of Diseases of Children, 1894.



feel cold; the tongue is dry, brown, and thickly coated; epistaxis is often obstinate, and hematuria may occur. The rash appears slowly, imperfectly, and irregularly, assumes a livid, purplish, or blackish hue, and may quickly retrocede; at the same time the skin is thickly mottled with petechiæ. The attack progressing, the pulse becomes so rapid that it can scarcely be counted; there is muscular tremor with muttering delirium, and life terminates in coma or convulsions. After death ecchymoses may be found in the viscera."

In the house-epidemic here described it may be assumed that the infecting principle in all the cases was practically the same. The clinical variations must then be ascribed to constitutional peculiarities and varying powers of resistance in the different individuals attacked.

In this connection it is interesting to note that the grandfather of the patient died of diabetes, the father of pernicious anemia, the patient of malignant measles with rapid breaking down of the blood, and that his son had the benign form of hemorrhagic measles.

#### THE USE OF METALLIC DISCS AND CYLINDERS IN THE ELECTRIC TREATMENT OF DISEASES OF THE SKIN.

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MANY diseases of the skin are more favorably and more speedily influenced by the application of electricity than by any other method of treatment. It is by no means, however, a matter of indifference in what form the force is employed. Some affections are most distinctly improved by the use of static electricity; in others, amelioration is brought about by faradism or galvanism, as the case may be; while in some instances an alternation of the faradic and galvanic currents has a more beneficial effect than can be obtained from the restricted use of either of the forms.

Many ingenious appliances have been invented by which the force may be most conveniently and advantageously used in affections of different regions of the body. In the treatment of diseases of the skin I am in the habit of using, with much satisfaction, metallic discs and rollers which can be readily attached to the conductors. These electrodes are nickel-plated and have several important advantages in practical work. The use of metallic plates, discs, or cylinders is a cleanly or aseptic means of applying faradism or galvanism to the skin. The metal can always be cleansed by an antiseptic solution immediately after each operation, and can be washed in boiling water.

Metals are not only cleanly, but they furthermore possess a twofold therapeutic application. The first consists in moderate pressure by the operator. The degree of pressure may be easily regulated and constitutes a valuable therapeutic factor in maladies of the skin. In the second place, galvanism, applied with moderate pressure, has a deeper penetrative action upon pigmentary deposits, inflammatory infiltrations, and neoplastic formations.

The discs employed are of circular shape and about three inches in diameter. The cylinders are about five inches in length. These metallic appliances have been made for me by the E. A. Yarnall Company, of Philadelphia.

When the diseased surface is of considerable extent, the cylinder may be rolled to and fro, the pressure being regulated according to the nature of the case. Upon smaller areas the discs may be left in contact until the patient experiences a sensation of warmth in the skin.

Applied by means of metallic plates and rollers, galvanism relieves painful conditions of the skin and anomalies of sensation; it stimulates absorption and has a parasitocidal influence. Applied in the formative stage of acute inflammations it will very often abruptly arrest their progress. This brief statement of the valuable properties of galvanic electricity is suggestive of its various uses in dermatology.

Dermatalgia, or neuralgia of the skin, gives rise in many cases to extreme pain and in some instances it may involve a large area. In the latter event especially, the application of mild galvanic currents by means of the metallic cylinder has a speedy effect in diminishing the suffering. The constitutional effect of the agent will not infrequently prove of avail in permanently removing the condition upon which the distressing manifestation depends. Hyperesthesia and hyperalgesia, so closely related to dermatalgia, both as regards their mode of origin and the sensations to which they give rise, may be successfully treated in the same manner.

Paresthesia, or pruritus, a more common neurosis than those just mentioned, causes, in many instances, suffering scarcely less intense than acute pain. The peculiarly annoying sensations banish sleep, and the frequent loss of rest may even affect the general health. Paresthesia is particularly atrocious when it attacks the orifice of the rectum or vagina. In consequence of scratching, the skin is often thickened, reddened, fissured, or even eczematous. Very commonly the morbid sensations are experienced simultaneously upon a large portion of the general surface or, as frequently happens, they are suddenly transferred from one to another region. These peculiarities present a serious ob-

stacle to the employment of ordinary methods of treatment. One cannot be constantly anointed, mopped with lotions, or lie indefinitely in a bath. Electricity is, in these cases, a powerful means of relief, not only acting upon the peripheral distribution of the nerves, but also in influencing the state of the central nervous system. Its use may be modified in such a way, also, as to stimulate the activity of the alimentary system, upon some fault of which the paresthesia often depends.

In cases of general itching the metallic cylinder may be used, with excellent results, to subject the affected surfaces to the influence of galvanism. When the seat of disease has been thickened as a result of constant irritation, I often employ with success faradism in alternation with galvanism. The use of electricity has a further advantage in these cases. It quiets the central nervous system and predisposes to sleep, so that the patient who has been tossing upon his bed in torment is once more enabled to enjoy peaceful and refreshing slumber.

Other maladies in which itching is a prominent feature are likewise mitigated by the alternate use of the faradic and galvanic currents. As regards this symptom, eczema is notably to be included in the same category. Itching is one of the most constant symptoms of eczema and attends nearly every stage and form of that disease. At times the distress to which this subjective symptom gives rise is almost intolerable. The manifestation is the most severe in the case of nervous subjects. Electricity, moreover, plays a more important rôle in the treatment of eczema than the mere relief of a symptom, however troublesome. In the chronic form of the disease the skin becomes thickened and hard from inflammatory deposits. The inelastic integument is likely to crack, especially in those parts most subjected to motion. The fissures, once produced, are difficult to heal. The alternate application of faradism and galvanism stimulates the absorbent vessels; the infiltration is gradually removed; the fissures then yield to treatment and the surface returns at length to a normal condition.

The smarting, tingling, burning, and itching of urticaria are allayed by the application of galvanism, which will, not infrequently, bring the attack to an end.

The galvanic current, administered through discs or rollers of metal, is a most valuable therapeutic measure in the treatment of psoriasis. The applications may be made daily, and are certainly the most effectual local means at our command for causing resolution of the thickened patches characteristic of the disease. In an affection so notoriously obstinate as psoriasis galvanic electricity deserves to be prized as a valuable form of treatment. At the

same time we should not overlook the advantage of making use of proper medicinal methods for counteracting any toxemic condition that may underlie the cutaneous disease. Galvanism is particularly efficacious in those cases in which psoriasis has its origin in some disturbance of the nervous system.

The sorbefacient power of galvanism has been demonstrated in some diseases that are of yet more inveterate and generally incurable character than psoriasis. In scleroderma the integument is thickened and hardened by an actual increase of organized tissue. The connective-tissue elements and the yellow elastic tissue of the corium are hyperplastic, and in some cases the muscular fibers are also increased. No method promises so much relief in such a serious deviation from the normal type of nutrition of the integument as does galvanism. Clinical experience has demonstrated that galvanic electricity is more potent in this fortunately rare disease than any other method of treatment. The inelastic patches of morphea, also, are more amenable to the same applications than to purely medicinal means. The same method may be used with favorable results in the case of several varieties of new formations, such as keloid and fibrous tumors of the skin, hypertrophied scars and angiomas.

Galvanism diminishes active congestion by a stimulant effect upon the vasomotor nerves and consequent contraction of the vessels. For the same reason it may, when employed with judgment and caution, arrest rapidly the course of an acute inflammation. In erythema it overcomes the dilatation and turgescence of the capillaries; the redness of the skin fades and the transudation is absorbed.

The application of mild galvanic currents has an excellent effect in relieving the itching and smarting sensations of dermatitis due to poisoning by *rhus toxicodendron* and similar plants. The swelling is at the same time reduced. In erysipelas the method is no less useful. Many surgical procedures, some of them quite elaborate, have of late years been proposed and practised with the view of limiting the spread of erysipelas from its point of origin to other parts of the surface. This very desirable object may often be accomplished by the application of a weak galvanic current, and the metallic cylinder furnishes an excellent means by which it may be brought into contact with the surface. The metallic electrode, being placed in connection with the kathode, or negative pole, is moved slowly around the circumference of the erysipelatous patch, the positive pole being held stable at the center of the lesion. The strength of the current should not exceed 5 or, at most, 10 milliamperes.

In cellulitis good results may be obtained by the same method of treatment. If the case is seen sufficiently early the formation of pus will generally

be prevented. In those other painful and severe affections of the skin and subcutaneous cellular tissue, boils and carbuncles, leading to suppuration and necrosis, galvanism, applied in the manner described, notably diminishes and shortens the inflammatory process and, if applied in the formative stage, has even an abortive effect. The constitutional depression produced, especially by carbuncle, is also combated by the use of electricity.

A mild galvanic current, transmitted through the metallic disc placed over the lesions, checks the progress of herpes. The smarting, burning, and pain are alleviated, the spread of the vesicles is arrested and their drying is promoted. This treatment is equally efficacious in herpes zoster. It checks the development of the vesicles and, furthermore, is of marked utility in relieving the lancinating pain that generally accompanies the disease and that sometimes is very resistant to the influence of drugs. As, in the commonest form of herpes zoster—that which occurs upon the side of the chest, in the course of the intercostal nerves—the involved surface may be of considerable length, the metallic cylinder will be preferable to the disc.

Mild galvanization is beneficial in acne. It abbreviates the duration of the lesions and lessens suppuration. It promotes the resolution of acne-papules and softens and removes the hard lesions of acne indurata. Faradism is also of service in acne, affording relief to the itching and reducing the swelling of the skin. In the different forms of acne—rosacea and alopecia—I have frequently employed these two forms of electricity in alternation. Not infrequently I derive more benefit from their alternate application than from the restricted use of either form.

We have in galvanism an effective method of treating seborrhœa oleosa. A slightly exaggerated activity of the sebaceous glands may merely serve to produce a cosmetic defect, which, however, is capable of causing much distress of mind in its subjects. In some cases greasy crusts are formed and the affection gives rise to itching and burning sensations. The transmission of a galvanic current through the metallic disc in contact with the seat of disease affords marked relief to the symptoms and brings about a healthy condition of the glands.

It has been shown that the lesions of lupus vulgaris may be favorably influenced by galvanism, which causes the nodules to undergo resolution and absorption and stimulates the ulcers to repair.

The dilatation of the vessels, the passive congestion, and the tenderness that persist for a long time after the occurrence of frost-bite may be relieved by alternate applications of the faradic and galvanic currents.

The destructive effect of electricity upon micro-

organisms has been utilized in the treatment of some of the parasitic diseases of the skin. There is reason to believe that the bactericidal properties of this force are destined to be more generally employed in dermato-therapy than they are at present. Some of the good results produced by its use in acute and suppurative inflammations may be due to its parasitocidal action. Cases of tinea trichophytina and tinea favosa have been cured by galvanism. The force was, however, employed in a different manner from that described in this paper. Solutions of chemic substances having antiparasitic power were driven into the follicles, ducts, and glands of the skin by the action of galvanic electricity, the sponge-electrode being moistened in the solution and pressed firmly upon the skin.

## ORIGINAL ADDRESS.

### HIGHER MEDICAL EDUCATION AND THE NEED OF ITS ENDOWMENT.<sup>1</sup>

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THE invitation which I received from the Medical Faculty of the Western Reserve University, to deliver an address upon this occasion, carried with it the suggestion that I should speak of higher medical education, and of some of the advantages of liberal endowment of medical education. My choice of subject is in accordance with this suggestion, as well as with my own inclination.

The time has come when the needs of medical education should be brought forcibly before the general public in this country. Medicine can no longer be taught with the simple appliances of former times. The proper teaching of medicine now requires hospitals, many laboratories with an expensive equipment and a large force of teachers, some of whom must be paid enough to enable them to devote their whole time to teaching and investigating. These things require large endowments of money, and cannot be adequately secured simply from the fees of students. If the public desires good physicians it must help to make them.

In this country, for the most part, we cannot look to the State for endowment of medical education, but we must appeal to private beneficence. A few public-spirited and generous men and women have already given practical proof of their appreciation of these facts. With more general and fuller realization of the needs and present condition of medical education, and of the results that can be secured by its liberal endowment, there is every reason to believe that these benefactions will be largely and rapidly increased, and that thereby the condition of medical education in this country shall cease to be a reproach to us. During the last few years our methods and standards of medical teaching have shown remarkable improvement.

<sup>1</sup> An Address delivered at the Graduating Exercises and Fiftieth Anniversary of the Medical Department of the Western Reserve University, February 28, 1894.



What I shall have to say concerning higher medical education will relate to what may be done where there are adequate pecuniary resources outside of the fees of students, rather than to what may be practicable now in this place or generally in this country. The hampered conditions prevailing in most medical schools in this country do not permit the complete realization of the methods and standards of education of which I shall speak. One of the principal aims of this address, however, is to indicate the importance of securing endowments, in order to improve the character of medical education. I do not intend, however, to draw an ideal picture, but only one that is realized in many foreign countries, and which is in measurable distance of accomplishment in several medical schools of this country.

What preparation should a student bring to the study of medicine? It is highly desirable, in my judgment, that he should be liberally educated; that is, he should possess a degree in arts or in science which shall be an index of that knowledge and culture which, apart from any immediate bearing upon professional studies, are recognized as entitling their possessor to be ranked among liberally educated men. Scientific studies have acquired the right to rank with classic studies in affording this liberal culture; but the humanities should have a fair share of attention at this period of education.

The question has been discussed whether or not during the period of collegiate education the student who intends to study medicine should be required to pursue any special subjects, and especially such as bear a direct relation to his future professional studies. The answer to this question seems to me to depend upon the character of collegiate training on the one hand, and of medical training on the other hand. The primary purpose of collegiate education is to furnish a broad basis of mental discipline and liberal culture, independently of direct relation to professional work. Where, as in the old-fashioned colleges in this country, and in the gymnasia and lycées of Germany and France, the student enters college at the age of fifteen or sixteen, and is graduated at nineteen or twenty, it is not necessary or even desirable that the undergraduate student should specialize his work with reference to his future profession. Under these circumstances, which obtain in most foreign universities, at least the first year of medical study is devoted mainly to physics, chemistry and zoölogy, including comparative anatomy.

These are not, however, the conditions which prevail in this country at the present time, where on the one hand the average age of graduation from our best colleges is at least two years later than in Germany and France, and on the other hand, the medical schools do not furnish adequate training in physics, general chemistry, and biology, whereas these sciences are now generally included in the curricula of our colleges. When we consider the fundamental importance of these sciences for the study of medicine, the advanced age of graduation from college, and the special conditions of collegiate and medical education in this country, it seems to me clear that during the period of collegiate study the student intending to study medicine should acquire a fair knowledge of chemistry, physics, and general biology, and to these sciences should be added the study of French and German. Inability to read French and

German deprives the physician of personal acquaintance with a large part of the most valuable literature of his profession and makes it impossible for him to keep thoroughly abreast with the progress of medical science and art.

A year's collegiate study, of which practical work in the laboratory should be an important part, is the minimum requirement for such knowledge of physics, chemistry, and biology as should be demanded of medical students upon entrance, and a longer training is desirable. In physics especial attention should be given to mechanical and electric experiments. The student must learn at least the outlines of inorganic chemistry and the elements of organic chemistry, to enable him to study with any degree of intelligence and profit chemic physiology and pathology. In biology he should follow for at least a year a laboratory-course in the structure, life-history, and vital activities of selected types of animal and vegetable life. It is more important that he should acquire certain fundamental concepts concerning the structure and properties of living things, than that he should devote his time to systematic zoölogy. It is impossible to have any adequate understanding of the structure and functions of the human body in health and in disease without a comprehension of the fundamental facts of physics, chemistry, and general biology.

There are certain points which should be clearly understood as regards the requirement that the preliminary education of a medical student should be a liberal one, indicated by a degree in arts or science, and should be made to include a specified amount and kind of knowledge of physics, chemistry, and biology, with a reading knowledge of French and German. The justification for the latter requirement is that, inasmuch as students are kept in college in this country two years longer than in most foreign countries, they should be permitted to pursue during at least the last two years of their course subjects that bear upon the study of medicine, but which, although included in the medical curriculum in foreign universities, are strictly liberal studies, independently of their professional bearings. These sciences preliminary to medical study can be studied and taught better in the college than in the medical school, and, indeed, in foreign universities they are more often pursued by medical students in the philosophic than in the medical faculty. It would be a waste of energy and money to make provision for them in both the medical and the academic departments.

It cannot be truthfully said that the plan indicated need divert the preliminary education from a liberal to a technical and specialized one, for the degree in arts or science will presumably indicate that the student has a liberal education and the special subjects need not be taken up before the last two years of the course. This scheme presupposes that the student will have made up his mind to study medicine in time to include these special subjects in his undergraduate studies. If he has not done so, or if he chooses to exclude them from his collegiate work, he will be obliged to devote at least a year to them after graduation and before beginning the study of medicine. The college-authorities should, however, direct attention at the proper period of the course to the importance of these subjects for those

who intend to study medicine. This plan, moreover, adjusts medical education to existing conditions of collegiate education in this country, without any essential changes in the curriculum of the latter.

The advanced age of graduation from college is a serious embarrassment to higher medical education in this country and has led to the unfortunate result that with the increase in the time required for the study of medicine there has been a falling off in the number of medical students with a college-degree in at least one of our leading medical schools, although it cannot be doubted that the average amount of preliminary education has increased among our medical students.

Various suggestions have been made, especially by the medical faculties of our universities, to remedy this anomalous condition of collegiate education or to adapt it to the needs of medical education. I think that we may assume that the college-course is not likely to be shortened, or that the college will relinquish that part of its development which has made it something between the old college and a university. There is good reason to believe that there are serious defects in our systems of primary and secondary education, and that without lowering the standard of admission better methods of teaching will enable students to enter college at least a year younger than is now the case.

The plan has been adopted in some of our colleges of permitting students to begin their medical studies in the medical department at the beginning of their senior year. This is a plan which, of course, is applicable only when there is a medical school in connection with the college, and involves certain sufficiently apparent difficulties. I think, however, there is much to be said in favor of this arrangement, which permits the student to take up the study of human anatomy, physiology, and physiologic chemistry in his senior year in college, provided he has sufficient preliminary training in the fundamental sciences that have been mentioned. It may, however, be questioned whether the time available for the study of physics, chemistry, and general biology in college is any too long for this purpose, and will permit the addition of human anatomy with dissections, and other subjects that must be a part of the regular medical curriculum. Unless the student has completed the work of one year of the medical course, I do not see the justification of permitting him to shorten by one year the regular medical course because he has a college-degree.

It should be understood that if a medical school requires for admission a year's collegiate training in physics, chemistry, and biology, subjects that are included in the medical curricula of European universities, its period of medical study is, according to European standards, lengthened by one year, the first year being relegated to the collegiate period.

The only medical school in this country in which a liberal degree is required for admission is that of the Johns Hopkins University. Here it is also required, for reasons that have been stated, that the candidate for admission shall be able to read French and German, and shall have had a year's collegiate training with laboratory-work in physics, chemistry, and biology. It is of course impossible for unendowed medical schools to demand anything approaching these conditions for

admission. I do not undertake to say that, even were other medical schools so situated that they could demand them, it would be wise for them to do so under present conditions, but it seems to me that there is room in this country for at least a few medical schools with such a standard. Exactly what it is feasible to require as a general standard for admission to medical schools in this country at the present time is a subject which, as already said, I do not consider in this address.

It is true that without a liberal education a man may become a competent physician, and may attain even a high standard of excellence in his profession, but with such education he is better adapted for the study of medicine, he is more likely to succeed in his profession, his social position will be better, and his life will be fuller.

The ultimate and essential aim of medical education is to train persons to treat conditions of disease and injury of the living body. This art, the most difficult and responsible of all human arts, rests upon a foundation of scientific facts relating to the structure and functions of the body in health and in disease. These fundamental facts are comprised in anatomy, physiology, and pathology. Upon the basis of these medical sciences the student is prepared to study the nature of therapeutic agents and their effects upon the body, and to proceed to the study of practical medicine and surgery. The greater part of the time to be devoted to the practical branches must be given to general medicine and surgery, including obstetrics and gynecology, but opportunities must be afforded for acquiring some knowledge of the various specialties. Instruction should be given also in hygiene, legal medicine, and medical history.

To anyone who is at all familiar with the contents, constantly increasing, of these various branches of medical study, it is clear that it is hopeless to attempt to give the medical student a complete knowledge of any one of them. This would require for each subject a period of time at least equal to that available for the study of all.

How long should be the period of undergraduate study in a medical school? In Europe it is nowhere less than four years, and in most European countries it is longer. In Sweden it is nine or ten years, in Spain seven years, in Italy and Holland six years, in Austria, Russia, Portugal, and several universities of Great Britain five years, in Germany four and a half years. In Canada the required period is four years.

According to a statement kindly furnished to me by Dr. John S. Billings, fourteen regular medical schools in the United States either now require, or during the coming year will require, attendance upon four annual courses of lectures in conferring the degree of doctor of medicine. Thirty-seven schools require four years of study, of which one year may be only with a preceptor. Seventy-six require three courses of lectures, and seven require only two courses.

The required period of study in the Medical Department of the Johns Hopkins University, where a full year of collegiate training, with laboratory-work in physics, chemistry, and biology, is required for admission, is, according to European standards, at least five years.

Four years of undergraduate study in a medical school, each year of study being the usual academic

year of about eight months, are as much as can reasonably be demanded in this country at the present time. This length of time is sufficient, if the student enters with a satisfactory preliminary training, especially if, as is often the case, he supplements the undergraduate course with a year or a year and a half in a hospital, or a year of special post-graduate study.

Only those medical schools that have good laboratory and hospital facilities are warranted in establishing a four years' obligatory course. It would be absurd for some medical schools, with their pathetically meager outfit, to require the student to remain with them four years.

As regards the distribution of subjects in the medical curriculum, the amount of time to be given to each, and the methods of teaching, there is, of course, room for much difference of opinion. I should say that in a four years' course the first two years should be devoted mainly to the fundamental medical sciences, to wit: anatomy, physiology, physiologic chemistry, pathology, including bacteriology, and pharmacology, and that the last two years should be given to practical medicine, surgery, obstetrics, and hygiene, with a limited consideration of the more important specialties. Before entering upon the latter half of the course the student should pass an examination upon the studies of the first two years. The examinations upon both the scientific and the more strictly professional subjects should include practical exercises.

The study of human anatomy will extend through the first two years, and will include in the first year dissections and laboratory-courses in normal histology and embryology. Gross anatomy should be taught mainly by dissections and from text-books. Applied anatomy and special dissections will fall mainly in the second year, and partly may be left, as regards special points, to the supervision of the teachers of the practical subjects.

My preference is for the Continental rather than the English conception of the department of anatomy, viz., that the professor of anatomy should be a scientific man, broadly trained in comparative and human anatomy, not engaged in professional practice, and having under his supervision all that belongs to normal anatomy. He should be well enough paid to be able to give his whole time to his subject, and should have under his charge a well-equipped anatomic laboratory. There is, however, no serious objection to referring the instruction in normal histology and embryology to the physiologic department. Indeed, it is desirable that some consideration of physiologic function should be combined with the instruction in microscopic anatomy.

The subject of physiology, which treats of the normal functions and activities of the body, is of the first importance in medical education. It has attained a higher degree of precision in experimental methods than any other medical science. A good knowledge of physiology is the best corrective to irrational theories and practice in medicine. Physiology has become a highly specialized science, and should be represented in the medical school by a good physiologic laboratory and a teacher who is thoroughly trained in physiologic methods, and can devote his whole time to the subject. It should be taught by demonstrative lectures, text-books, and laboratory-courses. Laboratory-courses in physiology, although important, are hard to arrange, on account of special

difficulties inherent in the subject. They do not, therefore, play so predominant a rôle as in the teaching of anatomy and pathology. The study of physiology will continue throughout the first year, and may extend into the second.

The chemic side of physiology has become so large and specialized and is so important in medical education that chemic physiology, or as it is generally called, physiologic chemistry, has come to be recognized as a distinct department in many medical schools. There are advantages in keeping this branch of study in the physiologic laboratory. Whether or not it is made subordinate to physiology or is established as a separate department will depend largely upon the special interests of the professor of physiology and the kind of man selected to teach physiologic chemistry, as is illustrated by the different arrangements in this regard in the German universities. The teacher should be a thoroughly trained chemist and also familiar with physiology and medicine.

Physiologic chemistry means much more than what is usually taught in our medical schools as medical chemistry, which includes little more than the chemic analysis of certain fluids of the body for diagnostic purposes. Anatomic structure and physiologic function depend to a very large extent upon chemic composition. Our knowledge of the processes of nutrition, digestion, and secretion, both in health and in disease, has been greatly advanced in recent years by the work of physiologic chemists. The microorganisms that cause infectious diseases do injury largely by their chemic products, and many of the questions relating to infection and immunity can be answered only by the aid of chemic investigation.

"I cannot understand," says Hoppe-Seyler, as quoted by Chittenden, "how at the present day a physician can recognize, follow in their course, and suitably treat diseases of the stomach and alimentary tract, of the blood, liver, kidneys, and urinary passages, and the different forms of poisoning, how he can suitably regulate the diet in these and constitutional diseases, without knowledge of the methods of physiological chemistry and of its decisions on questions offering themselves for solution and without practical training in their application."

Physiologic chemistry in the broad sense that I have attempted to indicate should receive proper consideration in a medical school. Its physiologic and pathologic bearings should be emphasized. It should be taught during the first year largely by laboratory-courses. It is important, as already stated, that the student should enter with sufficient preparation in inorganic and general organic chemistry to enable him to proceed at once to the study of chemistry in its physiologic relations.

Pathology I would place as a principal subject in the second year. This subject embraces general pathology, gross pathologic anatomy, and pathologic histology, and with it can be appropriately associated bacteriology. The student should be taught the proper methods of making post-mortem examinations and of recording the results in protocols. The teaching should be by lectures, text-books, and to a very large extent by demonstrations and laboratory-work. As abundant use as possible should be made of the demonstration of fresh patho-



logic specimens, which at the same time can be studied in fresh microscopic sections. Bacteriology can be taught in a laboratory-course of two or three months.

It seems to me advantageous that the systematic study of pathology should precede that of the clinical subjects. The latter, however, should be accompanied with the demonstration of pathologic specimens and with courses in clinical microscopy, so that the pathologic knowledge and experience of the student will be kept fresh and will be increased during the last two years of the course. The pathologic laboratory, which it is desirable to have in close connection with the autopsy-room, should be in charge of a professor who gives his whole time to the subject, and it should be well equipped for work in all departments of pathology, including bacteriology. An active and well-organized pathologic laboratory can have a very important influence for good upon the life and scientific activities of a medical school and hospital.

Pharmacology, or the study of the nature of therapeutic agents and their behavior and effects in the living body, has become of late years a more scientific subject by closer association with the methods of physiology, chemistry, and experimental pathology in investigating the action of therapeutic agents upon patients and experimentally upon animals. Our knowledge has become greater and more precise as to the behavior of drugs within the body, and as to their action upon the circulation, digestion, secretion, and other processes and functions of the body. A large number of new drugs are constantly brought to the attention of the profession. Of these Dr. Delafield has said: "Many of the new drugs are of much help to us; we can do useful things to-day that we could not do some years ago, but it must be admitted that we can also do harm in a greater variety of ways." There is a tendency to greater simplicity in prescriptions and a more extensive employment of other than pharmaceutical methods of treatment.

The teacher of pharmacology should be trained in the modern methods of pharmacologic research, and he should have under his charge a laboratory in which the student may acquire by practical work some of this knowledge.

The teaching of the application of therapeutic agents to the treatment of disease should fall to a large extent upon the teachers of clinical subjects.

As the time of the student will be so fully occupied with anatomy, physiology and physiologic chemistry, and the corresponding laboratory-work during the first year, the study of pharmacology may be left to the second year, where it seems appropriately to belong.

When we are told that hygiene is the study of the causes and prevention of disease, and that its aim is to preserve and to promote health, it would seem as if this subject were of the first importance in medical education. But when we consider what a complete department of hygiene really means, and what are the problems with which the modern hygienist has to deal, such questions as the sanitary condition of houses and communities, the contamination and purification of drinking-water, the disposal of sewage, the adulteration of food, the dangers of certain occupations, the study of vital statistics, matters relating to sanitary legislation, it is apparent that undergraduate instruction in hygiene for

the medical student must be more restricted than the theoretic and practical importance of the subject would seem to indicate. Still it is important that some instruction in this subject in the form of demonstrative lectures should be an obligatory part of the course, and among the optional subjects of the last years of the course, laboratory-work in hygiene may be well included. Many licensing and examining medical boards require that the candidate shall be examined in hygiene. The student should learn at least enough of sanitation to know that there are many sanitary subjects upon which intuitional judgments are of no importance, and that as regards these only the opinion of a sanitary expert is of any value.

Practical training in bacteriology falls in many foreign universities to the department of hygiene. This must be taught, but it makes little difference whether it be taught in the pathologic or in the hygienic laboratory, although personally I prefer its association with pathology. Each of these laboratories must be supplied with facilities for bacteriologic work.

We owe to Pettenkofer, of Munich, the first organization of a complete hygienic laboratory, and this has served as the model for many others. The Munich laboratory has been one of the ornaments of the University, and has been of inestimable value to the city in bringing about such great improvements in public sanitation that typhoid fever, the most significant index of the hygienic condition of a city, has virtually disappeared, whereas it was formerly so prevalent that visitors were warned against it. The development of bacteriology and its association with hygiene has led during the last decade to the establishment of a department of hygiene in most German universities. Fortunate that medical school, and especially fortunate that city, in which there is a well-equipped and active laboratory of hygiene. So beneficent may be the working of such a laboratory to the general community, that this is a department for which the support of the public could be reasonably solicited. Medical officers of public health should of course be especially trained in hygiene, as is required in England.

The last two years of the medical course should be devoted to the study of the strictly professional, the so-called practical, subjects. The previous study of anatomy, physiology, physiologic chemistry, pathology, and pharmacology has been the best preparation for the pursuit of the practical branches of medicine, and it should be recognized that the place of these sciences in the course and the amount of time devoted to them are justified on the ground that they furnish an important part of the training of practitioners of medicine and surgery.

The teaching of the strictly professional subjects must be eminently practical and cannot be satisfactory without sufficient clinical material. The student should have the opportunity of frequently observing patients in the hospital-wards, in the operating-room, and in the dispensary, and of seeing methods of treatment and their results. He should come into personal contact with patients, should examine and study them, should take their histories, follow the course of disease, and report upon the cases. Attendance upon clinical lectures cannot take the place of this direct, personal, continuous observation of cases of disease. Students during their last years should enjoy some of those advantages of a

hospital-service that have usually in this country been reserved for the fortunate internes. It is especially as regards arrangements for such personal clinical work for the students that our overcrowded medical schools are at a disadvantage as compared with schools of smaller attendance. Hence Billroth, in each of the fifteen editions of his *Lectures on General Surgical Pathology and Therapeutics*, has admonished students: "Flee therefore in the beginning of your clinical studies the great universities."

The attempt to cover the whole ground of the theory and practice of medicine and of surgery in courses of didactic lectures is rapidly giving place to systematic clinical teaching and recitations from text-books. Practical courses in methods of diagnosis and in the use of clinical instruments of precision are essential. Clinical laboratories have become a valuable adjunct to the department of medicine, and should afford to the student practical courses of instruction relating to such subjects as the examination of sputum, blood, gastric contents, secretions, etc.

Surgical practice has profited even more than medical practice by the scientific discoveries of recent years. The general principles of surgical procedure have become much more simple and straightforward than formerly, and the results of their application are in the highest degree satisfactory. In the allotted time the student can acquire a fair knowledge of these principles by lectures, clinics, and practical courses, but only study and practice after graduation can make him a surgeon.

It seems to me that a considerable part of the instruction on certain subjects in general pathology—as, for example, inflammation and tumors—often assumed by the professor of surgery, should be left to the professor of pathology. I venture to say also that, according to a distinction in titles, and at least to some extent in usage, in many American medical schools the implication that the main professorship of surgery is one primarily of didactic teaching and the subordinate professorships are those of clinical teaching is singularly unfortunate.

Greater use than is customary can be made of experiments upon animals in teaching some matters pertaining to surgery, such as certain details in surgical technique, the healing of wounds of different parts of the body, their behavior under the influence of antiseptics, of foreign bodies, and of other circumstances, etc.

I shall not speak on this occasion of the instruction in obstetrics.

It is impossible for the medical student in his undergraduate days to acquire any thorough knowledge of the various specialties in medicine. Too much should not be attempted in this direction. The study of some specialties should be obligatory, that of others may be optional, but the medical school should furnish opportunities for the study of all.

I should like to see in every medical school a course of lectures upon the history of medicine. It adds to the liberal culture of a physician to learn who have been the great discoverers and the master-minds in medicine, what has been the condition of medicine at different periods of the world's history and among different peoples, what doctrines have prevailed, and by what means progress has been achieved.

As regards the methods of teaching medicine, the keynote at the present time is object-teaching. For nearly two centuries traditions derived from the University of Leyden have largely controlled systems of medical instruction. Purely didactic lectures, designed to cover the whole ground of medicine and surgery, acquired undue prominence in the scheme of instruction. We now believe that greater emphasis should be laid upon the study of text-books, and that the student should be brought into direct, personal contact with the objects of study. The scientific subjects must be taught largely by laboratory-practice and the practical subjects in the clinic.

While laboratory-teaching is of the highest importance, it nevertheless seems to me possible to give to it too exclusive prominence, although I am reluctant to say this in view of the prevalent defects in opportunities for laboratory-work in most of our medical schools. There is no medical school in this country which is able at present to furnish all of the laboratory-instruction which is to be desired.

It should be borne in mind that laboratory-methods are extremely time-taking and are not adapted to teach the whole contents of any of the medical sciences. It is, of course, hopeless to attempt to demonstrate practically all of even the more important facts that the student should learn. Laboratory-work is especially valuable in training methods of thought and observation and in developing the scientific spirit. The knowledge derived from actually seeing, touching, experimenting, is of course more real and impressive than that which comes simply from reading and from listening to lectures, but the student whose knowledge of a subject is derived exclusively from laboratory-courses is likely to lose his perspective in details, to acquire only fragmentary knowledge of a subject, to fail to comprehend the general bearing of observed facts, and not to acquire the general principles and systematic conceptions which are essential. Laboratory-courses may be conducted so that some of these defects are minimized, and these points would perhaps not need emphasis if the time available for the study of the different subjects were unlimited, but a large number of subjects must be taught in a comparatively short time. Laboratory-work should be accompanied and supplemented by the reading of text-books and by lectures. The details of every subject must be learned to a large extent from books. Didactic lectures have their place in presenting the broad outlines of a subject in a systematic way and in emphasizing, as only the living voice can, essential and salient points. Such lectures can be made also demonstrative by drawings, charts, specimens, experiments, the use of the magic lantern and the exhibition of original monographs and works not readily accessible to students.

Recitations upon the subject-matter of lectures, of text-books and of laboratory-courses are especially important. They bring the teacher into personal contact with the student, they secure systematic reading and study, they bring to light the difficulties and misconceptions of the student, and afford opportunity for their correction.

As I have already said, only a relatively small part of medical science and art can be taught during a period of four years. This necessitates a careful selection of the subjects to be taught, of the amount of time to be

given to each subject, of the sequence in which the subjects are to be taken up, and of the methods of teaching. There must be a careful adjustment of the various parts in their relation to the whole, and in their relation to the ultimate objects of medical education—the training of practitioners of medicine and surgery. No subject should be taught as if the student were to become a specialist in it. The teaching must be simple and clear. The problems that are of most interest to the teacher are often not those with which the student need concern himself. The majority of students will not have opportunity or inclination after graduation to devote much time to a continuation of the study of anatomy, physiology, and pathology, and these subjects, being of fundamental importance, should therefore be taught with much thoroughness.

It is important that the student should carry away from the medical school a certain mass of positive knowledge. It is still more important that he should acquire some measure of medical wisdom and of the scientific spirit, and that he should have that methodic training in observing and in drawing logical conclusions, and that familiarity with instruments and methods of examination which will enable him to continue independently his education, to follow and incorporate the new discoveries in medicine, and critically to judge and to make the most of his own observations. Medical education is not completed at the medical school; it is there only begun. Of the various subjects in a medical course, the fundamental medical sciences are especially those which afford to the student this methodic training, and are calculated to develop habits of accurate observation and to stimulate scientific interest in the practical side of his profession. The medical art is becoming more and more the application to practice of medical science. It is the development of medicine along the lines of a biologic science that renders it increasingly attractive to liberally educated men with inclinations to scientific pursuits.

The medical school should afford encouragement to special and advanced work. The few who have the capacity, the inclination, and the time to become investigators and teachers should find there stimulus and opportunity. It should be a place where medicine is not only taught but also studied. It should have a share in the advancement of medical science and art by encouraging original work, and by selecting as its teachers those who have the capacity and the training for such work. The heads of departments should be supplied with a sufficient number of assistants, so that their time need not be given wholly to teaching. These assistants ought to be paid. In most laboratory-courses there should be at least one demonstrator for every fifteen students. In the selection of assistants preference should be given to young men who desire to carry on original work, who have aptitude for such work and for teaching, and who would like to follow an academic career.

The sketch that I have drawn of a medical school is not intended to be an ideal or impracticable one. It is simply what is realized in many foreign universities and what the best opinion in this country desires. It is not to-day realized in any medical school in this country, although a few are approaching this standard.

That a medical school as completely equipped as I have indicated does not exist in this country is not due to any lack of appreciation on the part of medical teachers of its necessity, but is due to the fact that such a school cannot exist without large endowment, either from private philanthropy or from the State, and none of our schools has sufficient endowment for this purpose.

A properly equipped and organized medical school, with all of the necessary laboratories and a sufficient number of the right kind of teachers, is an enormously expensive affair, far more expensive than any other professional school. The most pressing need of our medical schools to-day is thoroughly equipped laboratories in charge of well-trained teachers and investigators who can give their whole time to their special work. The salary of such a teacher as head of a department ought to be not less than from four to five thousand dollars per annum. There should be six of these laboratories, to wit, of anatomy, physiology, physiologic chemistry, pathology, pharmacology, and hygiene. It is better to place bacteriology with pathology or hygiene than to make of it a separate department.

The suitable construction and equipment of these six laboratories will cost at a moderate estimate from two hundred and fifty to three hundred thousand dollars. From eight to ten thousand dollars is a moderate estimate of the amount needed to cover the average yearly cost of each of these laboratories for salaries of professors, assistants, janitors, and for current expenditures. I should say that, including the fees of students, the interest of not less than \$1,200,000, at 5 per cent., would be required to support a completely equipped medical school in this country. This sum does not, of course, include the amount needed for the support of hospitals connected with the school.

I have been kindly supplied by a friend connected with the Prussian Government with a statement of the amount of money bestowed yearly by the Government upon each of the medical institutes in the different Prussian universities. This amount does not include the salaries of the professors in charge of the institutes, but only the salaries of assistants and servants and the sum available for current expenses. I am permitted to publish only the total amounts and not the salaries of individuals.

The annual dotation by the Government for each of the following medical institutes in the University of Berlin for the purposes specified is: For the first anatomic institute, 40,690 marks; for the second anatomic institute, 11,430 marks; for the physiologic institute, 47,746 marks; for the pathologic institute, 24,450 marks; for the pharmacologic institute, 17,202 marks; for the hygienic institute, 18,500 marks; for the first chemic institute, 26,440 marks; for the second chemic institute, 18,435 marks. The Prussian Government, therefore, expends annually, outside of the salaries of professors, a little over fifty thousand dollars to support the laboratories of anatomy, physiology, pathology, pharmacology, hygiene, and chemistry in a single university. About three times as much money is given by the Government to the support of the laboratories as is devoted to the salaries of the professors, but these salaries are largely, often many times, increased by the fees of students. In



Germany the expenses of living and of the purchase of laboratory-supplies are less than in this country.

Medical education in this country has until recently been left to its own devices. Only within recent years has it received any aid worth speaking of from private philanthropy or the State, save the indirect aid from the establishment of hospitals and dispensaries.

The greatest impulse for the endowment of higher education in this country has been religious zeal. Contrast for a moment the endowment of theologic study with that of medical study. According to the forthcoming *Report of the Bureau of Education*, for proof-sheets of which I am indebted to the kindness of Mr. Harris, the Commissioner of Education, there were in the United States in 1890-91 only five endowed chairs in medical colleges, and not a single one of these south or west of Philadelphia. It may, I think, be questioned whether all or even any of the five chairs were adequately endowed. On the other hand, there were 171 endowed chairs of theology, many of these being in the West and South. According to the report of the same bureau, as quoted by Dr. Bayard Holmes, the productive funds in the hands of medical schools, both those connected with and those independent of universities, in the United States was, in 1889, \$249,200; while, at the same time, there were in the hands of schools of theology productive funds to the amount of \$11,939,631. In 1892, these figures were, for medical schools, \$611,214, and for theologic schools, \$17,599,979. In 1890-91, out of a total of \$1,466,399 given to institutions for professional instruction, 63 per cent. was given to theologic schools and 17 per cent. to medical schools. Medical departments of State universities received, in 1892, State aid amounting to \$40,500; technologic schools received State aid to the amount of \$747,504. When one considers that there are more than twice as many students of medicine as of theology, and that medical instruction is much more expensive than that of theology, and requires costly laboratories, the contrasts afforded by these figures are startling.

The Report of the Commissioner of Education comments as follows upon these statistics and similar ones relating to legal education: "There can be no doubt of the propriety of private philanthropy endowing theologic study, nor of the State's enterprise in supporting technical and pedagogical studies, but it is difficult to discover why such consummately practical and important topics as law and medicine should be neglected by private benevolence or public caution. It seems to be conceded that unendowed instruction in law or medicine will be just as poorly given as unendowed instruction in theology or pedagogy. Yet we find instructors in both these sciences, though necessarily State-supported on the Continent of Europe, in America left to live upon the meager diet of tuition-fees."

Higher medical education, no more than any other form of higher education, is self-supporting. A number of reasons might be specified to explain this singular neglect of medical education as an object of private endowment or State aid. I shall not consider these reasons here. Many of them pertain to conditions that have changed or are changing. The tide has already turned, and "the old order changeth, yielding place to new." The doom of the medical college responsible to no-

body, without hospital or laboratory facilities, has sounded.

"Unto everyone that hath shall be given, and from him that hath not shall be taken away even that which he hath."

The needs of medical education have begun to be recognized by high-minded and public-spirited philanthropists, such as Johns Hopkins, Vanderbilt, Mary Garrett, and your own John L. Woods. Such benefactors have "linked their names to those imperishable things" which make the most enduring monuments of a republic. I was particularly impressed by Mr. Adams' statement in his memorial address upon John L. Woods in this place, last October, that Mr. Woods' generous benefaction to this college was chiefly determined by "the fact that medical education had never been a favorite object of benevolence, while the improvement of medical education was really of the greatest importance."

In conclusion, let us not forget that a university or a medical college may have large endowments, palatial buildings, modern laboratories, and still the breath of life not be in it. The vitalizing principle is in the men—both teachers and students—who work within its walls. Without this element of life, this bond between teacher and taught, these things are but outward pomp and show. But let these greater opportunities receive the breath of life from the inspiration of great teachers and they then become the mighty instruments of higher education and scientific progress.

## CLINICAL MEMORANDUM.

### A CASE OF ANGINA LUDOVICI.

BY G. H. STOVER, M.D.,  
OF EATON, COL.;

LATE RESIDENT PHYSICIAN IN THE ARAPAHOE COUNTY  
HOSPITAL, DENVER, COL.

THE following case occurred during the visiting service of Dr. J. W. Exline, of the medical staff of the Arapahoe County Hospital, during my residence there:

Peter F., sixty-six years old, was admitted August 10, 1893, with the symptoms of an incipient submaxillary abscess of the left side. In the afternoon of the 11th he complained of sore-throat during my absence and was given tr. guaiac. ammon. by another resident. The soreness increased, and by evening there was slight dysphagia. Examination showed a little swelling of the left anterior pillar of the fauces; considerable saliva was being secreted. The man had not received any calomel. The conditions continued about the same until the evening of the 12th, when, on my evening round, I found him suffering from dyspnea, not very marked. Examination showed that the swelling on the left side of the throat had extended and presented more of an edematous than an inflammatory appearance.

Upon the advice of Dr. Exline, he was given ice to hold in his mouth, and ice was applied to the side of the neck. A little later I saw him again and the dyspnea was alarming. He could not lie down, but was sitting up gasping for air; his lips were dark and his face expressive of the greatest anxiety and agony. Another examination was made, showing the left tonsil, soft

palate, and walls of the pharynx to be greatly swollen; and there was dangerous edema of the glottis, from which he was in imminent danger of suffocation. The mucous membrane of and about the pharynx and the tonsil was not hyperemic or injected, and there were no signs of exudate or false membrane upon it; neither were there any ulcers upon the tonsils.

I ordered ten grains of calomel at once, and instructed the nurse to spray the throat every fifteen minutes with a solution of tr. ferri chloridi,  $\text{m}_{xxx}$  to the ounce of water; meanwhile, as I was unable to reach the laryngologist by telephone, I prepared to perform tracheotomy should the embarrassment of respiration continue. The spray was thus used some five or six times, with remarkable effect, as the breathing soon became much easier and the edema less. The spray was then used every half-hour for a few hours, and the remainder of the night every hour. At frequent intervals the man was given whiskey and milk (the naso-esophageal tube to be used if necessary), and this, alternated with eggnog, was continued throughout the next day. On the morning of the 13th there was only slight dyspnea and the calomel had acted thoroughly. The spray was then used every two hours, later every three, and finally omitted.

By evening there was noticed on the floor of the mouth (not in the cheek, as in noma) a good-sized necrotic patch, having a slight odor.

Hydrogen dioxide was frequently applied to this, with the result of limiting the spread of necrosis and almost destroying the odor. This necrotic tissue detached itself, and was expectorated at times during the next few days. The submaxillary inflammation did not go on to abscess-formation. The man was gradually put upon regular diet, was given iron and quinin in tonic doses, and rapidly recovered from his prostration. He was discharged September 2, 1893.

While the case here reported differs somewhat from the rather vague accounts of some authors, I believe that the diagnosis, which was based mainly upon Strümpell's<sup>1</sup> description, is correct.

The prompt action of the rather strong solution of iron certainly obviated tracheotomy.

## MEDICAL PROGRESS.

*The Supra-renal Gland and its Relation to Addison's Disease.*—AULD (*British Medical Journal*, No. 1741, p. 1017) details some interesting facts elicited in the course of a study of the supra-renal gland, and calls attention to the extremely vascular character of the inner cortical layer, contrasting strongly with the delicate, pearly-looking tissue of the medulla on the one side and the opaque, yellowish, external portion on the other. The blood seems almost entirely collected in this zone; the intra-vascular pressure is considerable, as indicated by the welling forth of the fluid that takes place after section. Further examination shows that the cells composing this layer are more or less pigmented, highly so in some cases, but faintly so in others. The existence of the pigmented cells has long been recognized, but their significance has not hitherto been understood. Sections reveal the fact that large numbers of red blood-corpus-

cles make their way into these cells, and are to be found in their interior in all stages of regressive metamorphosis, from the completely formed cell downward. Apparently by a chemiotactic action certain of the red corpuscles are selected and attracted within the phagocyte-cells. They can be seen passing inward, and at first cannot be distinguished in any respect from those in the vessels outside. Gradually they assume a greenish-brown coloration, and thereafter begin to break up into larger and smaller particles. The nucleus of the phagocyte is usually much obscured by the pigment-particles, but it is large, and together with the protoplasm may show signs of formative activity. The opinion is expressed that at least one of the functions of the supra-renal gland is the destruction of a certain class of effete red blood-corpuscles. In the medulla three kinds of cells can be made out: (1) glandular columnar or polyhedral cells, faintly eosinophilous, and with frequent, very large, round or oblong nuclei; these are regularly arranged in the meshes of the reticular network; (2) highly branched corpuscles, with peculiar staining reactions and absolutely non-eosinophilous; these seem to be modified nerve-cells; (3) ganglion-cells proper, which both cluster round large nerves that pass straight through the cortex, and likewise exist in isolated fashion in the reticular meshes. It is assumed to be the office of the medulla to test the quality of the blood, which, so far purified by filtration through the pigmented zone, passes through the medulla before it enters the circulation; certain appearances lead to the suspicion that the medulla is concerned in the further reduction of effete substances. The blood, after passing through the medulla, has the characters of arterial oxygenated blood. Viewing the supra-renal gland as an excretory or depurative organ the symptoms of Addison's disease may be ascribed to an intoxication resulting from the retention of excrementitious products, whilst the pigmentation of the skin is due to the circulation of certain products of the decomposition of hemoglobin. The cells of the cortical zone of the gland are but moderately eosinophilous, and their nuclei readily absorb logwood. Although the acini are usually entirely filled with cells, under favorable circumstances a considerable central lumen may be seen to be filled with secretion—an appearance resembling that found in the anterior lobe of the pituitary body. This secretion is carried away by lymphatics to minister to certain needs of the organism.

*Fatal Hemorrhage from Rupture of an Aneurism of the Hepatic Artery.*—SCHMIDT (*Deutsches Archiv für klinische Medizin*, B. lii, H. 5 u. 6, p. 536) has reported the case of a woman, some forty years old, under observation with a diagnosis of gall-stones, who, five weeks before death suffered from a moderate gastro-intestinal hemorrhage, a few days later from a second, together with slight jaundice, a third three weeks before death, and finally a fourth, copious bleeding, terminating fatally. Upon post-mortem examination, in addition to the profound general anemia, a false aneurism was found involving a branch of the hepatic artery, and rupture of which had caused death. There were numerous inflammatory adhesions in the right hypochondrium, involving the hepatic flexure of the colon, the great omentum, the duodenum, the gall-bladder, and the inferior surface

<sup>1</sup> Text-book of Medicine, Am. ed., 1892, p. 326.

of the liver. In the midst of the adhesions were a number of small abscesses, none of which, however, communicated with the gall-bladder. Both large and small intestine were filled with blood, which had gained entrance through three openings of communication between the duodenum and the gall-bladder. At each of these openings in the bladder lay a gall-stone, and the three stones fitted closely together. The cavity of the gall-bladder was dilated, while its wall was in places destroyed. The viscus contained also a false aneurism occupied by a large clot of blood, and communicating by an abnormal opening between the gall-bladder and the hepatic duct with a branch of the hepatic artery. The wall of the duct was ulcerated, and its lumen was dilated in the neighborhood of the perforation. The liver contained a large number of small foci, from yellowish-brown to dark-green in color, with softened centers, and containing pus-corpuscles, liver-cells, and granular detritus. These were found to represent altered inter-acinous biliary passages. Some of the biliary ducts were dilated, and in places surrounded by cellular infiltration. Two forms of microorganisms were found: principally streptococci and short rods in smaller proportion. The parenchyma of the liver was in places lost, as a result of increase in the interstitial connective tissue.

**Death from Convulsions following Rupture of the Stomach.**—O'FARRELL (*Lancet*, No. 3690, p. 1243) has reported the case of an apparently healthy, fairly strong boy, nearly thirteen years old, who while playing became cold and suffered with headache. The boy drank some tea, but would eat nothing, and was given a saline and put to bed. Vomiting took place twice during the night, and by morning the child was no better. The saline was repeated and was followed by vomiting. The complaint of headache persisted, and the mother gave the boy five grains of phenacetin, and in an hour and a half repeated the dose. An hour and a half after this the child suddenly began to scream and had an attack of the most violent convulsions, affecting all of the voluntary muscles. This paroxysm was followed in a short time by another, and the fits increased in frequency and intensity for an hour, when death took place. On post-mortem examination the abdomen was found full of matter similar to that which had been vomited during life and consisting of partly digested food mixed with bile. On the posterior wall of the stomach was a rent three inches long, around which was a large area of inflammation, while the neighboring tissues were soft and pulpy. The cavity of the stomach was empty; the esophagus and tongue were normal. The other organs were structurally perfect, but greatly congested; there was no peritonitis. Histologic examination disclosed a condition of fatty degeneration of the muscular fibers around the rent in the wall of the stomach.

## THERAPEUTIC NOTES.

**Arsenical Urethritis.**—CHALKE (*Indian Medical Record*, vol. vi, No. 8, p. 237) has reported the case of a man who came under observation on account of a urethral discharge of three days' standing, without assignable cause. There had been no sexual intercourse for several months. The meatus urinarius was slightly inflamed;

the discharge, which had been mucoid at the outset, was now muco-purulent. The urine was high-colored and its evacuation was attended with scalding. The man had had an attack of gonorrhea six years before, but subsequently there had been no difficulty with the genito-urinary apparatus. No constitutional or mechanical cause for the condition could be elicited, but on inquiry it was learned that the man had for two weeks been taking five minims of arsenical solution thrice daily, containing a total of about a grain and a half of white arsenic. Further investigation disclosed the presence of other symptoms of arsenical intoxication, *e. g.*, slight conjunctivitis, with suffusion and smarting of the eyes, slight edema of the lids, dry cough, irritation of the throat and nose, painful cramps, colicky pains in the lower portion of the abdomen, irritation of the rectum, painful defecation, urticaria, and general prostration. The arsenic was at once withdrawn, and diluents and demulcent drinks directed, together with an alkaline mixture. Improvement was immediate and rapid, despite the fact that stimulants were given, and in the course of two weeks the man was quite well.

**The Treatment of Pulmonary Tuberculosis with Petroleum.**—Having observed that laborers about the petroleum-wells of Roumania were free from pulmonary tuberculosis, PELLISSIER (*Bull. gén. de Thérap.*, 18. liv., t. cxxvi, p. 416) was led to the use of filtered crude petroleum, administered in capsules, in the treatment of the cases of pulmonary tuberculosis that came under his care during a period of two years, and describes the results as surprising. The cough soon ceased, then the sweats; appetite and sleep were restored; the pulmonary lesions receded; the breath smelled strongly of petroleum; but the digestion was not deranged. The patients were also made to breathe air that had been passed through petroleum. Administration of petroleum by the rectum was tried, but proved unsuccessful.

**For Pulmonary Tuberculosis** CROCQ (*Internationale klinische Rundschau*, 1894, No. 21, p. 745) recommends the administration of ergot or ergotin. The former may be given in the form of the fluid extract, in doses of from half a dram to a dram or more, and the latter in doses of from half a grain to four grains or more, several times daily. Not only is hemoptysis thus controlled, but expectoration is diminished, the sense of oppression is relieved, and the general condition is improved.

**For the Hemoptysis of Pulmonary Tuberculosis** DAREMBERG (*La France Méd. ; Memorabilien*, xxxviii, 3, 153) recommends, in addition to the usual measures employed, the application of ice to the testicles or the labia majora. There is felt a sudden, painful temporary sense of pressure, and the hemorrhage ceases. If the bleeding recurs the application may be made twice daily or continued for five minutes at a time.

### For Amenorrhea.—

R.—Hydrarg. chlorid. corrosiv.	gr. ¼.
Sodii arseniat.	gr. j.
Ferri sulph. exsic.	gr. xxx.
Potassii carb.	gr. xv.
Ext. nucis vomicæ.	gr. v. M.

Ft. pil. no. xxx.

S.—One before each meal.

Practitioner.



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## POSSIBLE CAUSES OF CHRONIC AILMENTS.

CHANGES affecting the health and the comfort of communities often take place so slowly and so insidiously that they are unnoticed until detected by some shrewd investigator or until some catastrophe attracts widespread attention to them. An instance of the first method was presented several years ago, when DR. D. D. STEWART, by making a careful inquiry into some cases of chronic disease that had seemed inexplicable to other physicians, elucidated the fact that chrome-yellow was being largely used by Philadelphia bakers as a substitute for eggs, and was causing much chronic poisoning. STEWART discovered nearly one hundred cases—many fatal—originating from two shops. Sudden developments of typhoid fever are constantly occurring in all parts of the world, and indicating previously unsuspected sources of danger in water and milk.

It is inadvisable to imagine causes of disease, yet sanitarians should not be oblivious to the manner in which the manufacturing industries are being modified by invention and discovery, or to the fact that such modifications are guided almost entirely by financial considerations, the effect on public health and happiness being allowed no influence, except when the injury is too flagrant to escape notice. In this manner, for instance, artificial

colors have been steadily substituted for the natural colors in articles of food and drink. Very few manufacturers (there are, it is true, some honorable exceptions) have ever investigated the wholesomeness of anilin-red, methyl-orange, and eosin before using them in food-products; few dairymen have thought it worth while to inquire if the preservatives they employ are unwholesome; nor have brewers cared to learn anything of the physiologic effects of beer containing saccharin, salicylic acid, or substitutes for hops and malt.

It is not impossible, therefore, that certain chronic ailments of obscure nature may arise from depression of the vital functions by some such unnoticed abnormal conditions, perhaps hardly reaching the grade of chronic poisoning. The extended contamination of canned goods, as shown by the investigations of the United States Department of Agriculture, was noticed some months ago in THE NEWS, and the possibility of the production of chronic ailments by this contamination then suggested.

Numerous other forms of food-adulteration, intentional and accidental, may be suspected, and among these may be mentioned the now widespread use of imitation-butter. Few persons appreciate the extent to which this substitution occurs, especially during the season when butter commands a high price. Much has been said about the wholesomeness of oleomargarin, but apart from the fact that it is certainly less readily digested than butter and less appetizing, it has been recently learned that it is subject to admixture with dangerous ingredients. That it is artificially colored has long been known, but it has generally been assumed that the colors used were only those usually employed by butter-makers—annatto and turmeric—and considered harmless. It has been shown, however, by recent analyses that at least one coal-tar color—methyl-orange—is now largely used, and as we are ignorant of the effect of long-continued small doses of this body, it is obvious that we have here a source of danger; nor is there any guarantee that the oleomargarin-manufacturers may not without notice or inquiry substitute a more harmful color if a cheaper or otherwise more satisfactory one be found.

Attention has been called to a still more dangerous adulterant, namely, paraffin. The chemists of at least one State experiment-station report this discovery, and there can be no doubt of the harmfulness of such addition. Paraffin is entirely indi-

gestible, and must interfere with the digestion of any fat with which it may be mixed. If this admixture be general, as may easily be the case, it will surely give rise to chronic digestive derangements.

Another source of chronic ailments, especially involving the nervous system, may be suspected from the extensive use of water-gas. This product has won its way into favor on the basis of cheapness alone, and many large cities have adopted it for general consumption. In spite of the statements of experts engaged by the makers, water-gas is far more poisonous than gas made from bituminous coal. This difference is almost entirely dependent on the presence in the former of a large percentage of carbon monoxid, one of the most insidious and deadly gases with which we are acquainted. Leaving out of question the cases of acute poisoning, which have added materially to the number of accidental deaths in all places in which water-gas has been introduced, it is worth considering if much injury to health is not occasioned by the continual leaking of the gas in quantities not sufficient to produce marked symptoms. House-fittings are rarely perfect, and although the smell of illuminating gas is often a means of warning of its escape, individuals may become accustomed to a slight odor of it, and fail to notice the leak. The active ingredient of water-gas is cumulative, and the constant inhalation of air containing only minute amounts of it must establish a condition of ill-health difficult of diagnosis. One often hears of persons who are sensitive to "sewer-gas." In reality there is no such specific gaseous product, but illuminating gas frequently finds its way into drains and sewers, and may thus get into houses, as well as through direct leakage. The possibility of such slow poisoning will make us thankful that the applications of electric heating and lighting are destined at no distant day to render gas an antiquated agent in the household.

## EDITORIAL COMMENTS.

**Elevation of Temperature as a Symptom of Paralysis Agitans.**—A frequent, though not invariable, symptom of paralysis agitans consists in the occurrence of a sense of flushing and heat, often attended with perspiration. Although considerable attention has been devoted to the thermometry of paralysis agitans, there is a lack of concordance of view as to whether either the general temperature or the temperature of the tremulous parts undergoes change. Among other things it has been thought that the movements of the affected parts most

likely give rise to some increase in the bodily temperature and a corresponding sense of heat. Some interesting observations on these mooted questions have recently been made by FUCHS at the clinic of Nothnagel at Vienna and are detailed in a communication in the *Zeitschrift für klinische Medizin*, Band xxv, Hefte 3 u. 4, p. 321. Among twenty-six cases of paralysis agitans he found nine that presented periodically recurring elevation of temperature, which disappeared rather rapidly after several hours' duration, the highest figure reached being 102.9° F. In cases in which a subjective sense of warmth was present it was found that there was also elevation of temperature. In one case, simultaneously with the subjective sensation, a difference was observed in the temperature in the axillæ and in the elbow-flexures, being 0.5° to 0.7° higher in the left axilla than in the right, although the right upper extremity was but little shaken and the left scarcely, if at all. The frequency with which this elevation of temperature may be observed in the course of paralysis agitans would thus seem to place it among the symptoms of the disease. Further, the curious observation has been made that in some cases a sense of chilliness has been present in conjunction with a depression of the temperature. In some cases, too, profuse perspiration occurs independently of elevation of temperature. These several manifestations are suggestive of involvement of thermic and vasomotor centers in the lesions of the disease.

### *Acute Miliary Tuberculosis of Pharyngo-laryngeal Type.*—

To the four types of acute miliary tuberculosis hitherto described—(1) a typhoid type, in which the symptoms of constitutional infection predominate; (2) a bronchopneumonic type, in which the predominant symptoms are referable to the respiratory apparatus; (3) a meningeal type, presenting symptoms of inflammation of the cerebral meninges; and (4) an intermittent type of protracted duration—CATTI (*Wiener klinische Wochenschrift*, 1894, No. 24, p. 438) would add a fifth, which he designates the pharyngo-laryngeal type. This, like the meningeal type, occurs especially in children. It is very uncommon, and from the symptoms of laryngeal obstruction to which it gives rise may be mistaken for diphtheria. The affection first manifests its existence by greater or less difficulty in deglutition. On examination the uvula, the soft palate, the epiglottis, and the aryepiglottic folds will be found swollen, edematous, reddened, and at times ecchymotic. At the same time there occurs an abundant eruption of partly gray, transparent, and elevated tubercles, and partly yellowish, not prominent, tubercles. The cervical and accessible thoracic lymphatic glands may be hyperplastic, and the action of the heart accelerated. The pulmonary percussion-resonance will be unaltered, while auscultation reveals the evidences of laryngeal obstruction. The temperature may not be altered. A fatal issue may result in the course of two or three weeks amid the symptoms of cardiac weakness, dyspnea, and cyanosis, or the duration may be protracted. It is possible that this form of miliary tuberculosis is not so rare as it appears to be, and that some cases of supposed diphtheria of the larynx of long duration and terminating fatally from heart-failure are actually cases of the laryngo-pharyngeal form of miliary tuberculosis.

*The Inhalation of Oxygen in Opium-poisoning.*—The usefulness of potassium permanganate as an antidote in the treatment of opium-poisoning may, in view of the evidence presented, be admitted. Upon what this antagonistic action depends has, however, not yet been demonstrated, though it is reasonable to assume that the oxidizing quality of the potassium salt plays a prominent rôle in this connection. This supposition would, in some measure at least, seem to be supported by the fact that the permanganate has also proved useful in the treatment of phosphorus-poisoning, cyanid-poisoning, and snake-bite. Further confirmation of this view appears to be afforded by the recent experience of MERRY (*Lancet*, No. 3692, p. 1372), who reports a desperate case of opium-poisoning in which inhalations of oxygen seemed to act as the determining factor in bringing about recovery. The victim, a male, thirty-two years old, had, three hours before coming under observation, taken of a preparation of variable composition an amount supposed to represent about eight grains of morphia. The man was unconscious, cyanotic, and breathing stertorously about fifteen times per minute. The corneal reflex was abolished, and the pupils were small and inactive. Flagellation, cold affusion, the use of the interrupted current, the vapor of strong ammonia, and subcutaneous injections of ether failed to bring about reaction. The respirations were labored and had fallen to eight per minute, and the pulse had become almost imperceptible. The cyanosis suggested the use of inhalations of oxygen, and these were forthwith instituted, pure undiluted gas being employed. In the course of twenty minutes the face had regained its normal color, the respirations were fuller, easier, and more frequent, and the pulse had become perceptible and regular. The patient was still stupid, although there was a slight response to corneal irritation. After an interval of half an hour the inhalation of the gas was resumed, with further marked benefit. Consciousness returned, and after the repetition twice of the inhalations after intervals of three-quarters of an hour, the point of danger seemed to have been passed. The man remained drowsy during the day, but did not relapse into stupor. He made a perfect recovery. The suggestiveness of this experience is entirely obvious, and the safety and innocuousness of the method must surely commend it to favorable consideration and intelligent trial in suitable cases.

## REVIEWS.

AN AMERICAN TEXT-BOOK OF GYNECOLOGY, MEDICAL AND SURGICAL, FOR THE USE OF STUDENTS AND PRACTITIONERS. By HENRY T. BYFORD, M.D., JOHN M. BALDY, M.D., EDWIN CRAGIN, M.D., J. H. ETHERIDGE, M.D., WILLIAM GOODELL, M.D., HOWARD A. KELLY, M.D., FLORIAN KRUG, M.D., E. E. MONTGOMERY, M.D., WILLIAM R. PRYOR, M.D., GEORGE M. TUTTLE, M.D. Edited by J. M. BALDY, M.D. Philadelphia: W. B. Saunders, 1894.

We believe that this book is a valuable addition to the literature of gynecology. The writers are progressive, aggressive, and earnest in their convictions. They

represent the best thought of the younger generation of medical men in this branch. What faults the book has indeed are the faults of youth. There is some evidence of hasty writing and careless editing. Opinions are often expressed in more dogmatic style than the same writers will employ, perhaps, later in their lives, and there is occasionally an apparent lack of studiousness in the preparation of the articles. To illustrate in part our meaning: Amputation of the clitoris is recommended "on account of . . . interference with coitus, etc., particularly when occasioning trouble in childhood" (p. 165).

The labia seem to have been the editor's or the proof-reader's chief orthographic stumbling-block. There is repeated mention of *labum minus*, *labum majus*, and the right *labia majora*, and this too as legends under illustrations. In the section on malpositions of the womb, the dogmatic assertion is made that "no attempt should ever be made to replace or otherwise interfere with a uterus which is bound in its displaced position (*sic*) by adhesions," a dictum to which men of experience will not unqualifiedly subscribe. The writer, in fact, seems not to have the courage of his own convictions, for he describes minutely the methods of doing what he strongly condemns.

The illustrations are exceedingly good for the most part. A few are in very questionable taste. Just as much could be taught by outline drawings of postures for examination and operations, as by photographs of nude women. In one or two sections the illustrations appear superfluous. The picture of a man washing his hands might be placed in this category.

In spite of these few imperfections the work, we repeat, is valuable. Its most useful field will be among general physicians. No book of composite authorship can ever be the best text-book for the medical student. There is in all such books an average of excellence. If any one of the individuals whose articles are above that average had written the entire work, it would be a better book than it is.

HUMAN BONES OF THE HEMENWAY COLLECTION OF THE U. S. ARMY MEDICAL MUSEUM. By WASHINGTON MATTHEWS, J. L. WORTMAN and JOHN S. BILLINGS, Surgeons, U. S. Army.

THIS elaborate production is a reprint of a memoir from the publications of the National Academy of Sciences. It includes the results of investigations of North American Indian skulls obtained by an expedition which was fitted out in 1887 with funds supplied by the liberality of Mrs. Mary Hemenway, of Boston, for exploring certain ruins in the valley of the Gila River in Arizona. All the facts are set forth in the most interesting manner by Dr. Billings in an introduction, the bulk of the pamphlet being written by Drs. Matthews and Wortman. The whole constitutes a bulky quarto of one hundred and thirty-five pages, containing over three hundred carefully executed figures. It is not often that the publications of the National Academy of Sciences can be appropriately reviewed in the columns of *THE MEDICAL NEWS*, but that this essay can be so reviewed is evident when we reflect that medical men are never indifferent to the facts of human anatomy and the physical condi-



tions of the human race. Nothing but praise can be awarded Dr. Matthews, who has written the greater part of the memoir, for his conscientious and laborious researches. That it was not expected from him that he should frame a very striking essay on craniometry is conceded. In the present state of the subject nothing is so absolutely uninteresting as craniometry. As to deductions Dr. Matthews is wisely silent. Craniometry has no deductions to give us worthy of the name.

We look in vain for conclusions respecting the previous work of Drs. Billings and Matthews on composite photography as applied to the cranium. Dr. Wortman's essay on the hyoid bone shows that the body of the bone was almost entirely free, and that the separate pieces of which the hyoid arch is composed were seldom united in a single bone even in the most aged individuals. This is a curious fact, and in our judgment is not explained on an hypothesis which is based on the use of the hyoid bone in speech.

We agree with the stricture of Dr. Matthews on the attempts to define the "German horizontal plane." We have studied at least one skull in which such a line would compel the face to so tilt as to bring the orbits in a position not unlike that of M. Scheuchzer's famous fossil. One would readily pronounce such a specimen to have belonged, if not to a *homo diluvii testis*, at least to a *homo theosophus*.

#### A MANUAL OF MINOR SURGERY AND BANDAGING.

By CHRISTOPHER HEATH, F.R.C.S., Surgeon to the University College Hospital, etc. 12mo, pp. 389. Philadelphia: P. Blakiston, Son & Co., 1894.

A BOOK in its tenth edition, and one which has now had an existence of over thirty years, needs no recommendation—it speaks for itself. This, the last edition, embodies the latest teachings as regards antiseptics, and is therefore more valuable than its predecessors.

The introductory chapter upon the relation of the house-surgeon to the other hospital-officers is particularly excellent, and might be read with advantage by many attending surgeons. It is particularly strong in recommending careful attention to detail, and seeks to impress upon the surgeon that no detail, no matter how trifling, should be *infra dig.* if it enhances the comfort of the patient or favors the progress of the case. The manner of procedure for the collection of court-fees in police-cases illustrates the practical character of the work in a phase of medical practice in which the novice is uninitiated. The preference given to ether as an anesthetic, while not thoroughly English, strikes the American favorably. All the sections are well written, and the book deserves the success it has always received.

#### SOCIETY OF THE LYING-IN HOSPITAL OF THE CITY OF NEW YORK (MIDWIFERY DISPENSARY). MEDICAL REPORT, 1893. New York: Martin B. Brown, 1894.

THIS report covers a period of fifteen months, and gives statistics of 2583 cases, the largest number of which were treated in the Dispensary. A "Statistical Synopsis," by J. C. Edgar, gives a *résumé* of the work done, together with an analysis of various clinical features. The report contains also an elaborate article

on "Fever in the Puerperal Woman," by S. W. Lambert and H. McM. Painter; a paper entitled "A Modification of the So-called Credé's Method of Expressing the Placenta," by J. W. Markoe, and a report of "Two Cases of Symphysiotomy," by J. C. Edgar. In addition to formal reports by the pathologist, embryologist, orthopedic surgeon, and bacteriologist, there is an interesting illustrated article entitled "Studies in the Development of the Alimentary Canal," by D. H. McAlpin, Jr.

## SOCIETY PROCEEDINGS.

### AMERICAN NEUROLOGICAL ASSOCIATION.

Twentieth Annual Meeting, held in Washington, D. C., May 30 and 31, and June 1, 1894.

#### FIRST DAY—MAY 30TH.

DR. B. SACHS delivered the President's Address. He said that from the scientific point of view clinical medicine and neurology are one and inseparable. The diseases that the neurologist is called upon to recognize and to treat are such that he must necessarily maintain a deep interest in the affections of the heart, of the liver, of the stomach, and surely of the kidneys. He cannot afford to neglect the lungs, nor even the bladder. He is asked, perhaps a little too frequently, to consider the condition of the generative organs, and he must be even better versed than the surgeon in the anatomy of nerves and muscles. The eye, the ear, and the nose have claims upon him. The entire organism is his daily concern, although he may claim to be more intimately acquainted with the structure and functions of the nervous system than with those of any other part.

It is nothing new to think of the ganglion-cell as the nutritive center for the white fiber connected with it, and to know that this white fiber is prone to undergo disintegration if separated from its nutrient cell; but it is new to learn that the entire nervous system is made up of such units of nerve-structure, consisting of a nutritive cell, of the white fiber that emanates from one process of this cell, and of its termination in brush-like fashion. It is new, too, that these units are connected with one another not by direct contact; that the terminal arborizations approach one another without coming into contact, and that these neurons connect the white and gray matter, and pass freely from one to the other, or may exist even within the gray matter alone. If the nutrient cell is destroyed, or if its influence over the fibers connected with it is interfered with, the death of this neuron is the natural result.

DR. SAMUEL AYRES, of Pittsburg, read a paper entitled "Myxedema Treated with Sheep's Thyroid." It was particularly advised that at the outset small doses be administered—from one to three grains of desiccated powder in capsules or tablets once or twice daily, and gradually increased to five grains three times daily, if required. Large doses at the outset have been frequently followed by dangerous symptoms.

The paper was chiefly devoted to suggestions as to the possibilities of the preparation in certain diseases non-myxedematous, and careful trial was recommended in selected cases of acute dementia, mania, melancholia,

epilepsy, chorea, tetanus, anesthesia, and erysipelas; but its indiscriminate employment was strongly discouraged.

DR. STARR, of New York, presented five photographs of patients with myxedema, in three of whom unmistakable improvement was shown. He had used various preparations of the gland, but there were serious objections to many of them. He had of late made satisfactory use of the cheapest preparation on the market, which is put up in the form of tabloids, each containing five grains of the extract. He was often consulted on account of the mental symptoms which were in many instances prominent in this disease. He had frequently observed melancholia with suicidal tendencies. In eight there were symptoms of dementia. He had found the preparation of use in neuroses of the menopause. Among a number of cases of akromegaly only two seemed to be benefited. The headache was relieved and a feeling of *bien être* was produced. His experience with thyroid gland in paralysis agitans, epilepsy, and progressive muscular atrophy was negative.

DR. GEORGE W. JACOBY, of New York, spoke of the difficulties in the diagnosis of true myxedema, and reported a case and presented photographs of a child aged fourteen. There was evidence of muscular dystrophy in the lower extremities. He thought that further experience might show a relationship between these two affections.

DR. E. D. FISHER, of New York, thought that the use of thyroid extract should be confined to the treatment of myxedema. There was no rational indication for its administration in other diseases.

THE PRESIDENT dissented from this view, and believed it was but fair to try this medicine empirically, as we were not as yet familiar with the true function of the thyroid gland.

DR. F. X. DERCUM, of Philadelphia, reported a case successfully treated by the extract.

DR. L. C. GRAY, of New York, stated that all animal extracts had a similar temporary effect. A number of cases of myxedema had relapsed. He had used the thyroid extract in only one case, with the usual good result.

DR. LEONARD WEBER, of New York, said there was not a single case on record that had been cured.

In one case under his observation, the result was remarkably good. Relapse is likely to occur unless the remedy is continued. He believed that greater and more permanent relief could be obtained by surgical means.

DR. WALTON, of Boston, mentioned a case which improved after the use of only five grains three times a day.

DR. J. ARTHUR BOOTH, of New York, read a paper entitled "The Thyroid Theory in Graves' Disease; Two Cases treated by Thyroidectomy." The following conclusions were presented: 1. It is by no means decided that a mere excess of the thyroid secretion is the sole and essential factor in Graves' disease; but as microscopic examination has demonstrated an enormous hyperplasia of the secreting structure, it is certainly reasonable to suppose that these changes must have some profound effect both on the quantity and the quality of the secretion. 2. If altered structure and not size is the test of the disease, then thyroidectomy should be considered even in those cases

in which there is little or no enlargement of the thyroid. 3. Cases of Graves' disease may be entirely cured by thyroidectomy. How this is brought about is not clear as yet. It may possibly be by one of three ways, viz.: a diminution of the functional activity of the gland-substance; a relief of the stretching and irritation of the sympathetic nerve-fibers; or, finally, the removal of pressure.

DR. J. J. PUTNAM, of Boston, said that in one English case reported, the patient seemed to be cured after the use of thyroid extract. He spoke of two patients treated by operation; one was improved and the other died. In both the pulse was excessively rapid. He thought it better to operate early, and not to wait until the heart's action became seriously impaired.

DR. J. MADISON TAYLOR, of Philadelphia, had used thyroid extract in Graves' disease without any perceptible improvement. He spoke of a case occurring in a child two years of age.

DR. W. J. MORTON, of New York, believed that patients had been cured by the use of electricity. He had often seen recovery after three or four months' treatment. He preferred this to any other method.

DR. DERCUM thought it difficult to explain the favorable result occurring after operative measures, and mentioned an instance in which the gland was exceedingly small.

DR. W. A. HAMMOND, of Washington, asked if Dr. Morton had used any other remedy in conjunction with electricity. He had been accustomed to diminish the amount of fluids taken and to give digitalis or hyoscyamin, with satisfactory results.

DR. MORTON replied that he used electricity only.

THE PRESIDENT thought that many cases were curable, and referred to the case of a young woman in whom the disease developed rapidly after a sudden fright. She improved after prolonged rest in bed, subsequently married and gave birth to a healthy child, and completely recovered from her symptoms of Graves' disease.

DR. BOOTH, in closing the discussion, said that the alleged danger from the operation is not borne out by statistics. In his case the patient did well. Galvanism had been faithfully used for seven months without satisfactory results.

DR. FREDERICK PETERSON reported a case of exophthalmic goiter cured by thyroidectomy.

Improvement began immediately after the operation. Shortly after the operation there was diminution of the tremor. The exophthalmos was lessened. The subjective symptoms had disappeared. The tachycardia grew less and less. Five years after the thyroidectomy there was no proptosis whatever, no tremor, no tachycardia, no thyroid swelling, and in fact the patient was well, and had been able to carry on her hard work steadily ever since. The only remains of the trouble is a somewhat rapid pulse, which varies from 90 to 100.

DR. G. W. JACOBY and DR. F. SCHWYZER, of New York, read a paper entitled "Experimental Investigations on the Physical and Chemical Action of the Galvanic Current upon the Living Organism." Recognizing that our scientific comprehension of the electro-dynamic curative action of electricity has been obstructed by the direction as well as the manner in which electro-physiologic work has thus far been car-

ried out, it was hoped that this obstruction could be met by the study of the chemic and physical actions of the galvanic current upon the simplest form of the organism, the living cell. With a view to answering the question: "Does the galvanic current produce any discoverable changes, physical or microchemic, in the single cells of the body?" a series of experiments upon animals (frogs, rabbits and guinea-pigs) and man was undertaken. The certain and positive results thus far obtained were: 1. That by passage of the galvanic current the red blood-corpuscles under the influence of the positive pole swell up and become increased in size, while under the influence of the negative pole they become crenated and shrunken. 2. That two animals being fixed back to back, and a current passed through both from chest to chest, the entire blood in the animal acted upon by the positive pole will contain more than 20 per cent. less alkali than that of the animal which has been exposed to the influence of the negative pole.

While it is believed that the majority of cells in the human body are influenced by the cataphoric action of the galvanic current, it cannot be stated whether or not the physiology of the cells is thereby altered, and to what extent; on the other hand, the decrease of the alkalinity of the blood by means of the current must have a very great influence on cell-life. This is shown by other experiments made upon spermatozoa. This influence consists in the production of a marked functional activity in the neighborhood of the kathode, on account of the slightly increased alkalinity, and reduced functional activity at the anode in consequence of decreased alkalinity.

DR. W. J. MORTON said that as for the results obtained, attributed to cataphoric effect, they seemed to be subversive of what is usually believed and taught, for it has thus far been accepted that the tissue at the negative pole had its fluidity increased, while that at the positive pole had its fluidity decreased.

Again, as to the action of the galvanic current in producing acidity of tissue at the positive-pole region and alkalinity at the negative, he welcomed the experimental evidence that this effect extended widely into the intrapolar region, and thus influenced the irritability of tissue as an anelectrotonus and katelectrotonus. This physical explanation of physiologic states had first been made by Von Humboldt, who attributed the increased response to the excitation of the negative pole to the increased alkalinity produced in an already alkaline tissue by that pole, and the decreased response to the positive pole to the fact that that pole produced an acid reaction. Dr. Morton would go further than this, and had already suggested as an explanation of the increased response to the positive pole in the reaction of degeneration of Erb, that the muscle degenerating had an acid reaction, and therefore responded most vigorously to the acid, viz. the positive pole.

As to alkalizing the blood electrically, we might perhaps do this better by alkalis administered by the mouth, but we could not by drugs do what Dr. Jacoby had done and render a tissue less alkaline or more acid. Therefore the local action of electricity in this respect could not be otherwise effected.

DR. WILLIAM C. KRAUSS, of Buffalo, N. Y., presented a Neurological Percussion-Hammer. In appearance

the hammer resembles the ordinary percussion-hammer, such as is employed more especially on the Continent, and particularly in France and Germany. It is, therefore, primarily a hammer, and for the neurologist may be used for testing the tendon and muscular reflexes, and for percussing the spine and head. The handle, being made of hard rubber, becomes warm on friction, while the head, being made of metal, remains always cold, thus affording the means for examining for thermo-anesthesia. The cap on the small end of the hammer-head is removable, and exposes a triangular-shaped spear about one-sixth inch long. The other end of the head has the rounded rubber-point, thus furnishing a sharp and dull point for examining for anesthesia. The spear is divisible, one-half remaining fixed in the hammer-head; the other half slides upon a scale graduated in millimeters and inches, forming part of the handle of the hammer, making an excellent esthesiometer. On replacing the cap, and removing the cap at the large end of the hammer, a camel's-hair brush is exposed, giving a soft and the metallic end a hard surface for examining sensation. Thus we have in one instrument nearly all the apparatus necessary for making an examination of a nervous case.

DR. J. MADISON TAYLOR, of Philadelphia, showed a neurological percussion-hammer, devised seven or eight years ago, and which has been in constant use in Philadelphia ever since. The instrument was described and illustrated in an article by Dr. Weir Mitchell in THE MEDICAL NEWS, January 23, 1888. The value of this little instrument resides in the fact that it is very useful, both in its special function of eliciting muscular reactions, knee-jerks, etc., for which it is particularly adapted, and also as a percussion-hammer to explore the chest, which purpose it serves unusually well.

It consists of a triangular piece of soft rubber, about an inch and a half on the base and two inches on the perpendicular of an equilateral triangle. It is held at its middle part by a band of metal surrounding it, and the handle is a direct extension of this band, all made in one casting. The original instrument had the handle upon the edge, which then left the general outline of a hatchet or Indian's tomahawk. Since then this handle is sometimes placed upon the middle plane of the rubber piece, the handle then dependent from this center giving the appearance of a hoe or an adze.

The important factor is that the rubber is quite soft, is rounded on the edges, and is about the thickness of the human finger, which it is devised to simulate. In striking a blow upon a tendon the rounded edge, very like the surface of an ordinary finger, comes in contact with the tendon, as, for instance, that of the knee, and the impact is comprehensive, strong, but painless. The pointed end is about the size and shape of the end of a finger, and is likewise comfortable in contact and efficient in eliciting muscle-jerks and reactions upon the surfaces, or is also useful in reaching for deep tendons, as the biceps-tendon, etc. Again, this surface is comfortable when the finger is used as a pleximeter. Indeed, a hammer is often much better than a striking finger, because the quality and direction of the blow can be much more exactly governed, and the general weight and size of this little instrument has been found most satisfactory in this particular.



DR. V. P. GIBNEY, of New York, read a paper entitled "Non-Operative Treatment of Metatarsalgia." He offered as a substitute for excision of the distal end of the fourth metatarsal bone or the branch of the peroneal nerve, a boot constructed on a Spanish last, with a heel a combination of an English and a French heel. The boot thus built transfers the weight from the ball of the foot to the plantar region just back of the ball of the foot and to the heel and that portion of the shank just anterior to the heel. The chief point insisted on was a snug fit around the instep shank, and a rather loose toe-portion. A number of successful cases were reported.

DR. CHARLES K. MILLS, of Philadelphia, had been in the habit of recommending a shoe similar to that advised by Dr. Gibney. Some cases, however, cannot be relieved by any form of shoe, as a neuritis may have become established. Operative means would then become necessary.

DR. PUTNAM considered it of value to make a carefully adjusted opening in the inner sole of the shoe.

#### SECOND DAY—MAY 31ST.

DR. W. J. MORTON, of New York, presented some microscopic slides showing the new neuroglia-stain of Weigert. The neuroglia-fibers are stained blue, while the nerve-elements are either not stained at all, or at least very faintly. The medullary sheaths do not accept the stain, and thus the field is left clear for the differentiation of neuroglia-fibers.

DR. MORTON also read by title a paper entitled "A Case of Multiple Neuromata, with Exhibition of Microscopic Sections of a Large Neuroma removed from the Ulnar Nerve."

The tumor developed upon the ulnar nerve about half way between the elbow and the wrist, and was about the size of a hen's egg. Cutting down upon the mass with a view of severing and suturing the nerve, if necessary, or of dissecting out as far as possible its strands, the tumor was found lying quite free, except for a few thread-like adhesions within a capsule, and the nerve traversed this capsule from end to end in five separate bundles. It was, therefore, possible to enucleate the tumor and replace the nerve-strands without the slightest injury to the latter. The tumor was a myxo-fibroma.

DR. GUY HINSDALE and DR. J. MADISON TAYLOR, of Philadelphia, read a paper on "Crossed Knee-Jerk," based on studies of over one thousand cases of nervous disease observed at the Infirmary for Nervous Diseases, Philadelphia, and the Institutions for Feeble-Minded Children at Elwyn, Pennsylvania, and Vineland, New Jersey. By the term crossed knee-jerk is meant that when the patellar tendon is struck the opposite leg is instantly made to approach its fellow; the phrase "in knee-jerk," or "contra-lateral knee-jerk" may also be used. The movement observed in the limb opposite to that of which the patellar tendon is struck is not an extension of the leg so much as an adduction of the thigh (vastus internus and crureus). The best attitude for eliciting the movement is by seating the subject at ease in a chair, with the body erect, and the knees ten or twelve inches apart, with the knee-joint at rather an obtuse angle, the feet being advanced a few inches. The phenomenon is observed in a small proportion of normal persons, and in from 20 to 30 per cent. of the cases coming to a clinic

for nervous diseases. It is distinctly proved not to be due to a communicated shock or jar to the pelvis by reason of its absence in all cases of locomotor ataxia, and its production in favorable cases on suspending the subject from the floor and observing the adduction of the thigh on tapping the patellar tendon, or, as in one case observed, tapping the tendo Achillis.

The crossed knee-jerk is also found to be reforcible. Reinforcement induces the movement in some cases in which it is not otherwise evident. A case was related in which a very slight tap on the patellar tendon caused violent contractions of both legs, so that the knees are brought together or cross over; a larger tap will cause, in addition, crossing of both arms in a sort of lock-spasm, requiring aid afterward in stretching out the limbs.

The reflex arc involved in movements of this kind is held to embrace the cerebrum.

DR. H. R. STEDMAN, of Boston, asked if this condition was not somewhat similar to the so-called allocheiria?

DR. WALTON had found not only the classic reflex, described recently by Remak, of toe-flexion on stroking the inside of the thigh, but had seen in cases of broken back both dorsal and plantar flexion of the toes on stroking various areas in the extremities.

DR. MORTON spoke of the application of faradism to the right sciatic nerve as having produced a reaction in the muscles of the left shoulder.

DR. GEORGE W. JACOBY referred to a paper read by him a few years ago, in which he had called attention to the phenomenon of irradiation of the electric current.

DR. MILLS believed that the best explanation would be forthcoming from a careful study of the distribution of cells and fibers in the cord and their relation to other parts of the system.

The PRESIDENT considered the title of the paper an unfortunate one, and did not look upon this phenomenon as a crossed knee-jerk at all, but as a contra-lateral muscular contraction. He thought its reflex character was quite doubtful, and that there was no difficulty in accounting for irradiation on anatomic grounds.

DR. DERCUM, of Philadelphia, exhibited a skull illustrating the ancient method of trephining.

DR. KNAPP, of Boston, read a paper entitled "Recurrent Oculo-motor Paralysis." He detailed the case of a man forty-one years old with some nervous heredity, who a year before coming under observation had had severe neuralgic pain over the left eye, with ptosis, external strabismus and numbness of the face, lasting for seven weeks. One year later he had intense pain in the left side of the head, with nausea and vomiting. There was complete paralysis of the left third nerve, with anesthesia of the nose and cheek on the left side, and paresthesia of the forehead. Photophobia was also present. The anesthetic region was extremely tender on pressure, and there was increased discharge from the left nostril. After two weeks the paralysis began to diminish, and after four weeks it had almost wholly disappeared, but the sensory symptoms still continued in a lesser degree. Statistics were given of forty cases, and of ten other cases of a doubtful nature. In only six cases has there been complete recovery from the paralysis in the interval between the attacks, and in four more the pupil remained dilated. In seven cases there was at first com-

plete recovery, but in the later intervals there was some paresis. The division of the cases into periodic and periodically exacerbating hardly seemed warranted, and although some of the cases resemble migraine the affection in most cases is not at all like migraine. Three autopsies have shown lesions involving the nerve, and most cases are probably due to such lesions.

DR. MILLS related that he had observed several cases of recurrent ocular palsy, with involvement of the fifth nerve. He had also seen cases of recurrent facial paralysis. The only probable explanation in most cases is that of organic lesion. He thought Knapp's cases were probably due to a lesion of root-fibers.

DR. MORTON PRINCE agreed with Dr. Knapp in believing that these cases were caused by organic lesion. He believed that pain, as a localizing symptom, possessed very little value. He would rather depend upon motor and sensory paralysis.

DR. WALTON thought that all cases should not be classed together. While many were of nuclear or basal origin, possibly some of the less grave cases were due to recurring edema or possibly vascular disturbance at the cortex, which would probably explain the coincidence of motor and sensory disturbance. Possibly some cases were allied to the severer form of hysteria.

DR. KNAPP, in closing the discussion, said that there was no case of complete recovery on record in which there had been both motor and sensory involvement. In cases of syphilitic origin, in which only one or two branches were involved, the lesion was more likely to affect the nerve after it had left the pons.

DR. CHARLES K. MILLS, and DR. JOHN ZIMMER, of Philadelphia, presented a paper entitled "Circumscribed Softening of the Pons, the Internal Capsule, the Caudatum, and the Lenticula in the same Case." This case presented two limited lesions of unusual interest—one in the pons, and a second involving the internal capsule, a small segment of the caudatum and the lenticula. The pontile lesion was accurately located a week before the death of the patient. The patient, a woman, forty-two years old, had a previous history of alcoholism and of acute articular rheumatism. A presystolic mitral and a systolic aortic murmur could be heard. For eight weeks previous to her admission she had had almost constant headache, worse at night; and on the day before was attacked, without loss of consciousness, with vertigo, double vision, and paresis of the right arm and leg. There was slight impairment of mental action, marked somnolency and imperfect articulation. At rest, the right eye turned strongly to the right, while the left was not deviated. Both eyes could not be turned together to the left. The lateral movement of the left eye to the right was also impaired, and slight nystagmus of both eyes was present. The lids of the left eye could not be brought fully together. Right facial paresis was present, but the tongue was not deflected from the median line. The tendon and muscle phenomena were much exaggerated in the paretic limbs. Anesthesia could not be discovered in any portion of the body. For a few days the patient improved considerably. The loss of power in the leg largely disappeared, and paresis of the face-muscles was only noticeable on smiling, but the woman remained totally unable to turn the eyes to the left beyond the median line. She slept or seemed to sleep much during

this time. Her temperature fluctuated slightly below normal.

About eleven days after admission she had a second apoplectiform attack. She was now totally unable to articulate, but understood what was said. She was also unable to expectorate, and there was interference with swallowing. She fell into a stuporous condition, with eyes fixed in the mid-position; the conjunctival and other reflexes were obtunded; the right pupil was smaller than the left; the face was drawn to the right, and the contents of the bladder and bowel were evacuated involuntarily. The woman died between four and five days after this second attack.

The autopsy revealed circumscribed softening with hemorrhagic infiltration. The lesion reached to within 1.5 mm. of the ventral surface of the pons; laterally extending to the raphé, and about the middle of the pons slightly across the mesial line. The area of softening became smaller and more deeply situated as it approached the post-oblongata, which it almost, but not quite, reached. A trans-section through the horizontal furrow, separating the pons and post-oblongata, showed perfectly normal structure.

The second lesion was revealed by a vertical trans-section of the right basal ganglia and capsule. The widest portion of the lesion corresponded to the plane of the cephalic extremity of the thalamus. It was about 17 mm. in its antero-posterior extent. The heart presented valvular lesions, and the kidneys, spleen and lungs pathologic conditions.

The pontile lesions in this case were of unusual interest in the study of the nuclei and root-fibers of the facial, abducens (external oculo-motor), and third nerves (common oculo-motor); and particularly with regard to connections of the facial and abducens. The lesion probably involved the root-fibers of the abducens, the fibers connecting it with the facial fibers or nucleus. The position of the nucleus was such as not by any possibility to involve the cell-nests of these nerves. The lesion involved the crustal portion of the pons, including a portion of the pyramidal tracts and the deep transverse fibers. The lemniscus, central tegmental tract and the structures of the tegmentum in general, probably escaped. The case was also of interest with reference to the question of the partial decussation of the facial root-fibers.

The lesion of the internal capsule was localized about the genu, probably involving the geniculate and speech tracts; the former, as is well known, including the corticobulbar bundles for the inferior facial, motor trigeminal and hypoglossal nuclei.

DR. WHARTON SINKLER, of Philadelphia, read a paper entitled "Lesion of Thalamus; Death from Intestinal Hemorrhage." He reported the case of a man, 67 years old, who had worked for many years in a stone-quarry, and had received frequent slight injuries to the scalp, in consequence of being struck by fragments of stone. On one occasion, after having been exposed to the sun, he was suddenly taken ill, and had to be removed to his home in an unconscious condition, where he was seized with convulsions, which lasted for the greater part of two days. After a month he was able to resume his work; but two weeks later he began to have epileptiform convulsions, which recurred at irregular intervals of from one to two a week. The seizures were always preceded

by an olfactory aura, the patient observing the smell of burning sulphur. After a few months the man had maniacal attacks after his fits.

The attacks of epilepsy were of the precursive form. In them the man imagined he was pursued by devils, and would run violently. After one attack the temperature rose, without any discoverable physical cause. The intellectual powers failed; and the man gradually fell into a somnolent condition, which lasted for nearly three weeks, at the end of which time he was suddenly, without premonitory sign, seized with intestinal hemorrhage of a profuse character, and from which he died in about twelve hours.

At the autopsy, the mucous membrane of the colon was found to be softened and deeply injected, but no lesion was found in the way of an ulceration or rupture of a vessel which would account for the hemorrhage.

The brain showed marked evidence of an old leptomeningitis over the left hemisphere, and there was atrophy of the vessels of the base. In the posterior right thalamus there was found a small area of softening. It was about one-third of an inch in length by one-fourth of an inch in its transverse diameter. No other coarse lesion could be found in the brain.

DR. C. L. DANA, of New York, presented a paper entitled "Cerebral Hemorrhage, its Cause and Premonitory Symptoms, together with a Report of One Hundred Consecutive Cases of Apoplexy, with Hemiplegia, and Seventy-nine Cases of Apoplexy, with Autopsy."

Of one hundred non-fatal cases thirty-six were due to syphilis. The special characteristics due to syphilis are that the cases occur in early life; that the lesions are often multiple in character; and that the pathologic condition underlying them is usually thrombosis and softening.

So far as Dr. Dana's experience and records went, cerebral hemorrhages are rarely repeated, and it seems as if in many cases the rupture of an artery changed the vital conditions, as it certainly does the personal habits, so that the attack exercises a conservative influence upon the individual, and actually tends to prolong life.

DR. E. D. FISHER, of New York, read a report of 77 cases; 51 had one attack; 16 two attacks; 9 had three and 1 had six attacks. All are still living. The average age at which the first attack occurred was 44 $\frac{1}{2}$  years. The longest duration since the attack was twenty-two years.

DR. WILLIAM BROWNING, of Brooklyn, read a paper entitled "Lumbar Puncture for the Removal of Cerebro-Spinal Fluid." He reviewed the main points in this recently devised operation. Brief notes of a few cases were given, as well as directions for its performance. The following conclusions were reached: 1. The method is simple, easily practised and rather attractive. 2. In itself it is usually without danger. 3. By it we certainly can draw off cerebro-spinal fluid. 4. The quantity removed at short sittings has been from one to one and one-half ounces in adults. 5. This, without doubt, represents the amount of free fluid usually present in the lower vertebral canal even when occluded above. 6. In internal hydrocephalus the relief, if any, is but very temporary. In the common form due to tuberculous meningitis the result is not worth the trouble, while in the closed or sacculated forms it must rather do harm than good. 7. As a diagnostic means, *e. g.*, in suspected meningeal

hemorrhage, it is valuable. As an index of pressure it may also be worth noting. 8. It is worth further trial: (a) As a passing relief in brain-tumors not complicated by hydrocephalus; (b) as a substitute for trephining in progressive dementia; (c) in certain spinal troubles; (d) and possibly as a means of applying medication directly to the spinal meninges. 9. In conclusion it may be said that while admissible in all cases of brain-pressure, there is as yet no established indication for this procedure except for diagnostic purposes.

DR. MILLS said that all operations of this kind were unphilosophic and would accomplish nothing, as the fluid reaccumulates. The same may be said of hydrocephalus. Some good may be done when the fluid is either blood or pus, otherwise the operation is not indicated.

DR. DANA had utilized this method in three cases of alcoholic meningitis (in the so-called "wet brain"). Two recovered and one died. In the adult the operation is difficult. He agreed with Dr. Mills as to its indications and utility. He believed that the operation possessed at least some rational foundation.

DR. THEODORE DILLER, of Pittsburgh, read a paper entitled "Non-Operative Treatment of Brain-Tumors." He took the ground that not all brain-tumors which could be localized should be operated on. He cautioned against regarding as successful those operations that merely succeeded surgically. The obstacles in the way of a complete success are many, and the results are disappointing in spite of the rich and growing knowledge of localization. Operations should not be undertaken unless the patient was getting worse in spite of medical treatment.

DR. STARR spoke of the case of a man with a doubtful history of syphilis and all the symptoms of cerebral tumor. Mercury was used and potassium iodid was given in doses of 300 grains daily. There was a marked improvement in all symptoms, and it seemed to be a case cured without operation. The patient died suddenly, and at the autopsy a cysto-sarcoma was found without any evidence of gummatous infiltration.

DR. PUTNAM believed we should only operate when there were definite indications.

DR. SINKLER mentioned the case of a man with Jacksonian epilepsy and no history of syphilis. Two years later symptoms of tumor were present. Mercury and iodid were used, but the man became progressively worse. An operation was performed, but no tumor could be discovered. The wound healed well. Since then the patient has improved steadily in all symptoms.

DR. JACOBY said there was a class of cases presenting all of the symptoms of tumor which get well without operation. He cited the case of a man with many of the symptoms, excepting optic neuritis, in which he was unwilling to make a positive diagnosis. The plasmodium malariae was found in his blood, and he made a complete recovery under large doses of quinin.

DR. SACHS stated that the results after operation are often disappointing, it may be on account of the delay in operating. He related an instance similar to that of Dr. Starr. At the autopsy there was found a typical glioma. The symptoms had entirely disappeared for several months. In another case with symptoms of tumor, iodid had been used, but the symptoms subsided after thorough mercurial inunction.



DR. W. M. LESZYNSKY, of New York, presented an electrode which had been specially constructed with a view to its usefulness in diagnosis.

### THIRD DAY—JUNE 1ST.

DR. HENRY R. STEDMAN, of Boston, read a paper on "The Treatment of Convalescence and the After-care of the Insane." He pointed out that the proper conduct of convalescence is vital to mental health. Instances of abrupt recovery with almost no convalescent stage are rare. Although such an event may happen in chronic cases, it occurs, as a rule, in those of short duration—notably confusional insanity and the toxic and neurotic insanities. Lucid intervals or spurious convalescences differ often in no respect from genuine recovery, with the single and essential exception that the sleep does not improve, or becomes worse. This is a valuable indication in the prognosis of permanent return to reason. To the cardinal signs of convalescence should often be added the disappearance of decided fear of a return of the attack and dread of the stigma to follow. It is important to be informed regarding normal and usual physical troubles of the patient, as their reappearance is another and valuable indication of recovery; so, also, a knowledge of the sequence of immediate prodromata of an attack. They are often repeated in reverse order while the patient is getting well. Complete mental rest during menstrual epochs is to be recommended, and application of the mind, even to a slight degree, in study or other work, is equally to be deprecated. Early discharge from the hospital, or from special care away from home, is, as a rule, to be advised against, especially in cases of melancholia with a history of suicidal attempts and after acute mania, the most exhausting form of insanity, and one that leaves the patient particularly susceptible to slight influences for long time.

On the other hand, early removal should frequently be advised in other cases convalescing from melancholia, particularly when homesickness is a marked feature, and occasionally when there is refusal of food. Certain cases of mild mania, also paranoiacs who are independent in the hospital and actively oppose treatment, are steadied by outside life. A change also works well until its novelty has worn off. The first year or so after recovery is a very critical time.

The statements made applied chiefly to well-to-do patients. There is practically no provision outside of hospitals for the after-care of the pauper insane, and practically little advice or other help is given those unfortunate on leaving.

These facts and others have led to the formation in France of protective societies, called *Societies of Patronage*, under official auspices. Their duties are to aid convalescent or recovered pauper patients by gifts of money, clothing, and tools, redemption of articles in pawn, payment of rent, admission to convalescent-homes in cottages intermediate between confinement and complete freedom, or in hospitals or houses of refuge; securing situations for them, and, finally, their supervision wherever employed. This work continues during the first month or two after the patient's discharge. Similar societies or means of relief have been formed in England and Scotland. There could be no better work on the score of both humanity and public

economy than the adoption in this country of similar means for the prevention of insanity.

DR. E. D. FISHER expressed the opinion that patients left the hospital too early. In cases in which they are over-sensitive regarding their previous incarceration, something must be done to care for them and obviate a relapse. He was in favor of establishing convalescent-homes for such patients, and spoke at length in confirmation of the views expressed in the paper.

DR. DERCUM stated that when the element of exhaustion was a prominent causative factor, the patient required detention and care much longer.

DR. STARR was glad to know that Dr. Stedman favored the earlier removal from asylums of melancholics. One of the chief difficulties was in controlling the family, who did not know how to manage the patient after his return.

DR. DANA said that the subject was of great economic as well as medical importance, and suggested that a committee be appointed to investigate the matter.

The suggestion was then presented in the form of a motion, which was carried.

The President appointed as a committee Drs. Stedman, Dana, and Dercum.

DR. BURT G. WILDER, of Ithaca, exhibited a suicide's brain with two pistol-ball wounds, together with a dozen photographs of various aspects, and blackboard diagrams of the left side and of a trans-section at the level of the fatal wound.

A dentist, thirty-five years old, was found in his office dead, with a 22-caliber revolver clapsed in his right hand. There were two bullet-holes; one in the middle of the forehead, the other in the right temple, neither ball having emerged.

The first ball, presumably deflected by the skull, passed caudo-ventrad to the cranial floor and was reflected dorso-caudad at nearly the same angle to a point just cephalad of the precommissure, where it lodged, having merely abraded the mesial surface of the left frontal lobe. The second ball entered at the right sub-frontal gyre, passed obliquely sinistro-caudo-dorsad, tore the callosum and intervening structures and emerged in the second left central fissure. As there was no suspicion of foul play, and documents in the handwriting of the deceased declared his intention to commit suicide, the case exemplifies the possibility of two self-inflicted bullet-wounds of one brain. The fissures present many peculiarities. The most perplexing is the apparent coexistence of two central fissures on each side. Only two such cases have hitherto been recorded, by Giacomini and Calori. Suicide had been committed by a grandfather and one uncle, and attempted by another uncle.

DR. DANA said that he had no doubt that the anterior of the two fissures was the fissure of Rolando. The interruption of this fissure on one side by a bridging convolution was extremely rare and very interesting. The brain presented a unique fissuration. Dr. Dana could not understand how a primary fissure like the Rolandic could be doubled in any event, and was skeptical of the genuineness of reported cases.

DR. EDW. B. ANGELL, of Rochester, read a paper entitled "Case of Infantile Hemiplegia, Imbecility, and Epilepsy; Craniotomy; Marked Improvement." The salient features of the case were a severe forceps-delivery,

succeeded by double ptosis, occasional tonic spasm of the right arm, contracture and hemi-palsy of the right hand. Physical and mental development was slow, and epilepsy, with from three to five seizures daily, supervened three months prior to the operation. At the time of examination the child was partly imbecile. The skull-measurement gave a cranial index of 0.77; the palate was high-arched, the teeth jagged, and the right wrist and hand, much smaller than the left, were helpless. A diagnosis of pressure in the neighborhood of the hand-center of the left motor area, due either to a hemorrhagic plaque or cyst, was made. Craniotomy was decided upon as a tentative measure, with a view of relieving pressure and consequent symptoms, while avoiding the greater risk of opening the dura necessary to a removal of the cyst-wall. Upon removal of the trephine-button a subdural hemorrhagic cyst was found. The cranium overlying the cyst had become much thinned, and was freely cut away beyond the limits of the cyst. By an aspirating needle a half-dram of fluid was removed; otherwise the dura was not injured. The scalp-incision healed readily, but through an over-tight bandage edema developed, which by the eighth day caused sufficient pressure to develop a severe convulsion and high temperature. With the remedying of this condition marked improvement in all the symptoms ensued.

Three months after the operation there had been no recurrence of the epileptic attacks, while there was a commensurate improvement in the mental and moral condition.

DR. MILLS considered it presumable that the cyst which was not opened was a porencephalic cavity, and that opening and draining it would have been useless.

DR. PUTNAM agreed with Dr. Mills. He said it was rarely possible to remove a cyst satisfactorily. In a case seen by him the cyst was tapped and the drain left in. Improvement followed.

DR. W. A. HAMMOND spoke of two cases in which craniotomy was performed. One was eighteen years of age, and became an imbecile as a result of an injury to the head. He remained in this condition four years. After operation there was improvement at the end of two months. At the end of a year the improvement was marked. In the other case of a similar character the operation was followed by improvement.

THE PRESIDENT said that cysts differed in character. The superficial cysts were due to meningeal hemorrhage during labor, and could be satisfactorily treated by operation.

DR. ANGELL, in closing the discussion, said this was not a case of porencephalus, but an arachnoid cyst from a meningeal hemorrhage.

DR. CHAS. HENRY BROWN, of New York, read a paper entitled "Infantile Amyotrophic Lateral Sclerosis of the Family Type." He reported the case of a boy, fifteen years old, who presented marked emaciation, particularly in the upper part of the body, and paralysis and atrophy of all the facial muscles, excepting those of mastication. Fibrillary twitchings were present all over the body. The superficial and deep reflexes were active. Ankle-clonus was demonstrable. There was double lateral curvature of the spine. Mentally the boy was fairly bright. He cried readily and was amused at trifles. He was microcephalic, and acted and

appeared like a child of ten. There were evidences of a general arrest of development. The case is considered as belonging to one of the family types of infantile progressive bulbar paralysis, plus the same implication that is found engrafted upon the progressive poliomyelitis of adults, and which gives us amyotrophic lateral sclerosis. In muscular myopathies the respiration is not involved; the upper facial muscles are usually unaffected; and the "tapir mouth" is not observed. The atrophy is more irregular, more nearly bilateral: that is, it is worse on one side. The electric reactions are not of especial importance in diagnosis. In some reported cases of infantile progressive bulbar paralysis they have been normal; in others there has been reaction of degeneration.

To place this case among the scapulo-humeral, or facio-scapulo-humeral types of muscular atrophy is out of the question. Though the neck is much thinned, the scapulo-humeral group and the back muscles are generally the best the patient has. What muscles he does possess are active, and the exaggeration of reflexes, the fibrillary twitchings, and the retractions of tendons, present though slight, preclude a peripheral origin of the disease. As far as is known, no case of the kind has ever been reported and diagnosed as infantile amyotrophic lateral sclerosis of the family type. In all the cases reported of these bulbar diseases belonging to groups of family types there has been marked difficulty of respiration and special implication of the upper branch of the trifacial nerve.

DR. KNAPP showed a microscopic specimen from a case of amyotrophic lateral sclerosis which occurred in a man fifty years of age. The disease progressed very rapidly. Death took place at the end of fourteen months of broncho-pneumonia. There were no bulbar symptoms. The section presented showed marked vascularity in the sclerosed portions of the cord.

DR. PUTNAM reported an analogous case of bulbar paralysis in a young child.

DR. PRESTON, of Baltimore, had seen the case of a child two years of age in whom spastic symptoms such as exaggerated knee-jerk and ankle-clonus developed soon after an attack of acute poliomyelitis.

DR. F. X. DERCUM and DR. W. W. KEEN, of Philadelphia, presented an article entitled "Two Cases of Ingravescens Cerebral Hemorrhage Treated by Ligation of the Common Carotid Artery." In the first case reported the symptoms pointed to a slowly progressive capsular hemorrhage extending over three days before ligation of the common carotid was resorted to. The symptoms were steadily progressive and threatened a fatal termination. Ligation of the carotid, as proposed by Mr. Horsley, promptly arrested the symptoms, and the man made an excellent recovery. Months afterward merely symptoms of a spastic hemiplegia persisted, but they were not very marked.

In the second case the symptoms pointed to a progressive hemorrhage occupying eight hours. The patient's condition was so grave at the time of the operation that little was hoped from it, and indeed it proved useless, the patient dying several hours afterward.

Dr. Dercum pointed out that the class of cases in which benefit is to be hoped for from ligation of the

common carotid are those in which the hemorrhage is decidedly ingravescens in type. He also dwelt upon the difficulties of a differential diagnosis between hemorrhage and thrombosis in such cases, and pointed out that even in case of an error in diagnosis it could not be said that the operation involved additional risk to the brain.

Finally he suggested that instead of ligation of the vessel the expedient of compression of the common carotid should be tried in every case of apoplexy as soon as the physician arrived. A surgeon is not always at hand, and besides, compression of the carotid is so simple a procedure that a bystander can easily be instructed in its application.

DR. FRANK FRY, of St. Louis, knew of several instances in which the operation had been done. All proved fatal. He believed that the operation was not indicated or justifiable.

DR. KNAPP believed that the neurologist does not see the case until it is too late to make a satisfactory diagnosis.

THE PRESIDENT thought the chief difficulty was in diagnosis and that the hemorrhage was usually a self-limited one.

DR. DERCUM, in closing the discussion, said the operation was only indicated when the diagnosis of ingravescens apoplexy was defined.

DR. W. A. HAMMOND, of Washington, read a paper on "Merycism." He reported the case of a young man whose mental condition was impaired, and who was also the subject of merycism.

No special treatment was undertaken to correct the merycism, but the patient was trephined for the purpose of improving his mental condition. There were no unusual features connected with the operation, but the regurgitation after meals did not occur till the fifth day, when there was a slight return. Eight days later a button was removed from the corresponding part of the left side of the skull. From that time (about ten months ago) to the present there has been no regurgitation. Whether the cure of merycism in this case was directly due to the operations on the cranium, or was the result of the mental improvement, is a question which it would be difficult to answer.

DR. KNAPP referred to two cases that had come under his notice. Both were in physicians in good mental condition. He thought a distinction should be made between congenital and acquired merycism.

DR. LLOYD believed that some cases should be considered as a neurosis allied to hysterical vomiting, such as regurgitation from the esophagus.

THE PRESIDENT had seen a man who had conquered the habit by the exercise of his own will. His views were in accord with those expressed by Dr. Lloyd.

DR. HAMMOND said that acquired merycism was always due to overloading the esophagus and to the bad habit of rapid eating. He thought it extremely doubtful as to its being a neurosis.

DR. J. HENDRIE LLOYD, of Philadelphia, exhibited a large number of sections from the mid-brain, pons, medulla, and spinal cord of a case of chronic chorea.

The following gentlemen were elected to active membership: Dr. Ira Van Gieson, of New York; Dr. E. B. Lane, of Dorchester, Mass.; and Dr. E. D. Bondurant, of Tuscaloosa, Ala.

The following papers were read by title: "Acute Anioneurotic Edema," by Dr. H. M. Bannister, of Kankakee. "Present Hospital Care of the Insane," by Dr. S. B. Lyon, of New York. "The Genesis of Hallucinations, Illusions, and Delusions," by Dr. H. A. Tomlinson, of St. Peter, Minn. "A Case of Acromegaly," by Dr. H. T. Pershing, of Denver. "Significance of Exaggerated Knee-jerk and Ankle-clonus," by Dr. G. M. Hammond, of New York. "Report of a Case of Spinal Syphilis and one of Intra-cranial Syphilis," by Dr. L. C. Gray, of New York. "Remarks on Cortical Sensory Localization," by Dr. Charles K. Mills, of Philadelphia. "Traumatism as a Cause of Locomotor Ataxia," by Dr. Morton Prince, of Boston. "Observations upon an Anencephalic Monster," by Dr. E. B. Angell and Dr. Henry Elsner, of Rochester. "Cerebral Edema," by Dr. George J. Preston, of Baltimore. "Gastro-intestinal Neurasthenia," by Dr. L. Weber, of New York. "A Study of the Temperature-sense," by Dr. W. H. Riley, of Battle Creek. "Aphasia following Acute Infectious Diseases," by Dr. P. C. Knapp, of Boston.

The following officers were elected for the ensuing year: *President*, Dr. Philip Coombs Knapp, of Boston. *Vice-Presidents*, Dr. F. X. Dercum, of Philadelphia, and Dr. W. A. Jones, of Minneapolis. *Secretary and Treasurer*, Dr. G. M. Hammond, of New York.

## NEWS ITEMS.

*The St. Louis Clinique* has passed under the editorial control of Dr. Emory Lanphear.

*Correction.*—In the 16th line from the bottom of the first column of p. 31 of THE NEWS of July 14th, the figures 0.2 should read 0.02.

*The Cholera* is reported to be spreading with alarming rapidity in St. Petersburg. On July 14th, 218 new cases, with 69 deaths, were reported. During the week ending July 15th there were 875 cases, with 294 deaths. On July 17th, 196 new cases, with 79 deaths, were reported. It is announced that cholera prevails in Dantzig, in Prussia. It is also reported that cholera is spreading throughout the Chinese Empire, and that the government officials are suppressing the facts.

*Joseph Hyrtl*, the distinguished anatomist, died at Vienna, on July 17th, at the age of 83 years. He was Professor of Anatomy in the University of Prague from 1837 to 1845, when he was elected to a similar chair in the University of Vienna. He was the author of a "Manual of Physiological and Practical Anatomy," and a "Manual of Topographical Anatomy and its Applications."

*The American Journal of Insanity* has been sold and transferred to the American Medico-Psychological Association, of which society it will henceforth be the accredited organ.

The journal will be edited *ad interim* by a publication committee consisting of Dr. Edward Cowles, President, and Dr. Henry M. Hurd, Secretary of the Association, and Dr. Richard Dewey, with the last named in immediate editorial charge. The office of publication has been transferred to Chicago.